

Local Project Administration

Certification Course Manual & Reference Guide

February 2005

**Construction Administration,
Documentation
and
Project Finalization**

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION BUILDING

16 STATE HOUSE STATION

AUGUSTA, MAINE 04333-0016



mdot

JOHN G. MELROSE
Commissioner

March 30, 2002

Re: Project # STP-4217(10)X

Allan Haggan
Assistant Program Manager
Maine Department of Transportation
Augusta, Maine 04333

Dear Allan:

On March 1, 2002 a Preconstruction Conference for the Limerick project was held at the Scarborough Division Office. The following attended:

Jim Ferguson, MDOT
Robert Libby, Limerick Water & Sewer
Rick Paraschak, MDOT
John Cleveland, Consultant
Joyce Noel, MDOT
Tom Shaw, Gorham Sand & Gravel
Holly Anderson, MDOT
Jim Shaw, Gorham Sand & Gravel
Christa Boucher, MDOT
Scott Doucette, Gorham Sand & Gravel
Eric Shepherd, MDOT

Peter Brown, MDOT
Brent Chesley, Wyman & Simpson, Inc.
Tim Sawtelle, Dirigo Eng.
Russ Welch, Wyman & Simpson, Inc.
Joanne Andrews, Selectman
Don Ettinger, HNTB
Martha Hamilton, Selectman
Chris Cucco, HNTB
Kenneth Laughlin, Selectman
Jerry Quirion, MDOT
Scott Doucette, Gorham Sand & Gravel

The following items were discussed:

1. Tom Shaw asked if the DOT would consider raising the proposed grade of the drainage in the area where the existing water and sewer had already been replaced. He expressed concern that there would be many areas of conflict with the water services and the water main if we did not redesign the drainage in the area of the hill.

Tom also stated that he was concerned that damage might occur to the water main while blasting and removing ledge to install the new storm drainage.

Tom expressed that he felt that the depth of the proposed drainage as shown on the plan was unusually deep, unlike the standards that he had experienced on other projects.

I said that the depths of the drainage as shown were within the perimeters of standard design used by the DOT. I also stated that we would do everything possible to eliminate conflicts with the sewer and water main; but water services in most cases would have to be moved in the event of a conflict with the new drainage. I also explained that the ledge was shown on the plans and that care would have to be exercised in order to prevent damage to the existing utilities; in some cases ledge may have to be removed by means other than blasting.

Tom asked who would be paying for the relocation of the utilities and if damage occurred while blasting, who would pay for that.

I stated that in the event that a conflict could not be avoided and the utility needed to be moved, the utility would be responsible. I also stated that damage, as the result of blasting was the responsibility of the Contractor.

I said that during the design phase care was given to design the system to avoid as many conflicts as possible.

This topic was discussed in great length and it was agreed that the DOT would look at a proposal from Gorham Sand & Gravel to raise the drainage, if after further review within the Department and HNTB, raising the drainage would not reduce its effectiveness or cause a detrimental effect to the base.

2. Russ Welch said that Wyman & Simpson were in the process of reviewing the feasibility of proposing the use of precast deck panels on the bridge.
3. I informed Gorham Sand & Gravel that Ron Taylor of Inland Fisheries and Wildlife had contacted me and requested that I ask if they would be interested in building the boat ramp and other associated work using Limerick project bid prices. I told them I would provide them with a set of plans and to please notify me of their decision.
4. Addendum#1: Discussed all items affected by the addendum. The issue of the Sediment Tank Unit Testing Procedure was the item that was of most concern to Gorham Sand & Gravel. Joyce Noel noted that she would like to see the testing requirements changed and remove the Contract Payment Retention clause.
5. Submittals: The Emergency Contact List, Schedule of Work, Soil Erosion & Water Pollution Control Plan were discussed. The Contractor was provided with a blank copy of the Emergency Contact List to fill out their numbers. I stated that the S.E. & W.P. Plan would need to be accepted and implemented prior to any soil disturbance on the project. The QC Plans for both Concrete and Pavement were said to be in the makings. I noted that the Concrete QC plan would have to be accepted prior to any concrete being used and that the Paving QC Plan needed to be approved before

holding the Prepaving Conference. I asked that the Contactor review the requirements for all necessary item submittals and to note their time allowances.

6. Performance Ratings: Discussed the Departments usage of the Contractors performance reviews. I noted that I needed to get them a copy.
7. Progress Meetings: Discussed that meetings would be held on a bi-weekly basis as needed to discuss any concerns the Contractor or other involved parties may have in regard to the progress of the project.

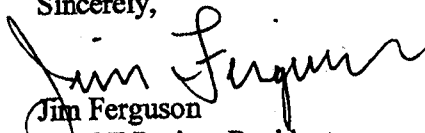
The following items in the Special Provisions were reviewed.

1. Instream Work: Instream work is allowed from 7/15 to 9/30.
2. Temporary Pavement: Discussed Special Provision requirement that Contractor replace pavement after installing drainage in areas that carry traffic with a minimum of 3 inches of acceptable hot or cold bituminous mixture.
Tom Shaw asked if they could use reclaim instead of hot or cold bituminous mixture. I stated that my experience in the past with reclaim was that it did not hold up as good as what was required by the contract and that it would not be accepted as a substitute. I did note that the contract required the drainage trenches be patched on a daily basis, but I would allow them to wait till Friday of each week if they so desired.
3. 106.3.4 Storage: Discussed that the Contractor should not use private property for storage without the written permission of the Owner and that they were required to furnish copies if requested by the Department.
4. Section 107: Noted that all drainage, paved drives, sidewalks and bridgework are to be complete at the time of winter suspension and that the specified contract completion date is June 6, 2003.
5. Section 203: Discussed the utilization requirements of salvaged pavement.
6. Section 304: Discussed the surcharge requirements of the contract.
7. Section 525 (Dry Laid Retaining Wall): Reviewed entire section, with specific notation of the construction requirements that state the wall shall be built by a skilled craftsman, that the stones shall be cleaned and that care shall be taken to expose weathered faces.
8. Section 615: Discussed loam requirements, that the Department may require the Contractor to test the loam. Also the placing requirements were discussed.
9. Section 637: Dust control of the project was discussed. I stated that the abutters along the project put up with a lot during the construction and that I felt we needed to do a good job controlling dust so that it did not get out of control. I noted that as required

by this contract failure to maintain dust control for the duration of the project could result in a project shutdown until dust is under control again.

10. Section 652: Discussed that the contract requires that a minimum roadway width of 22 feet for two-way traffic and a minimum of 11 feet for one-way traffic be maintained. Also noted was that no material or equipment is to be stored within 10 feet of the established travel lanes.

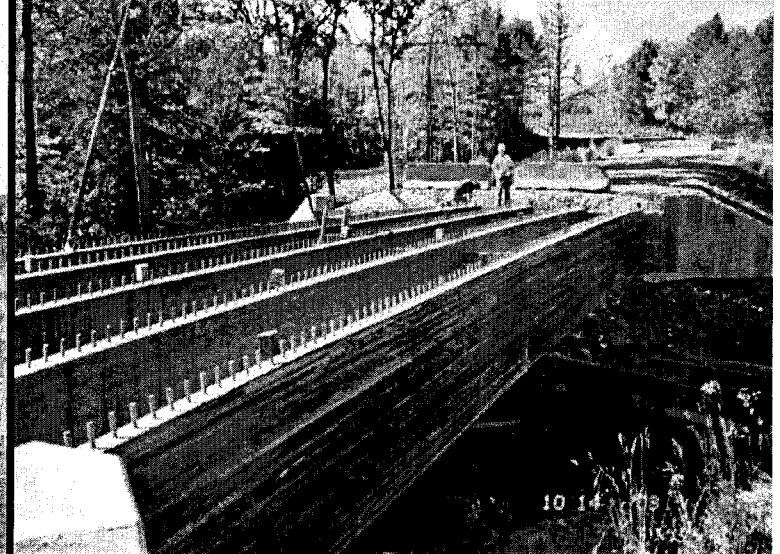
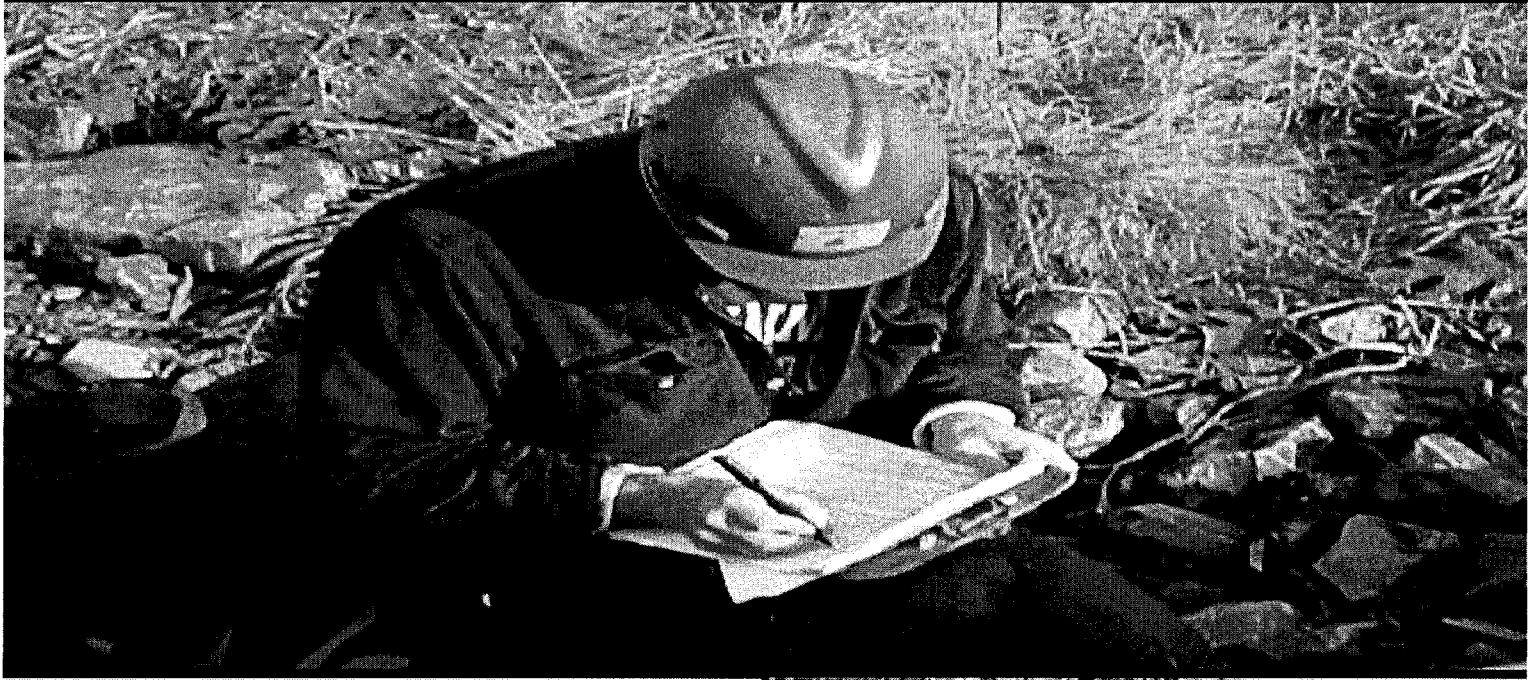
Sincerely,



Jim Ferguson
MDOT Project Resident

CC: Contractor
J. Noel
H. Anderson
File

PROJECT RECORD KEEPING MANUAL



Maine Department of Transportation

February 2005



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SECTION 108 - MEASUREMENT AND PAYMENT

108.1 General.

This Section describes, in general, Departmental policies and acceptable methods for measuring and computing contract quantities for progress and final payments. Divisions 200 through 600 and 900 of this Manual explain in more detail, the requirements and procedures to follow.

There are two systems in use and acceptable to the Department for documenting and measuring quantities for payment: the traditional "paper" method, the computer software program Field Manager - Field Book and Field Pad method. Residents are encouraged to use the software program when feasible.

If the Resident chooses to use the paper method, they will have the following project records; a Final Quantity Book, a Final Quantity Computations Book, a Project Diary, Testing file and a Construction Book. Other fieldbooks may be required, such as a Drainage Book, depending on the complexity of the project. If Field Manager is used, the project records will consist of an Item History to Date instead of the Final Quantity Book, a Daily Diary, and Inspectors' Daily Reports. The Inspector's Daily Report is needed to generate progress estimate quantities. A Construction Book is almost always necessary; it is policy of the Department and good record practice that original field measurements must be entered in a bound fieldbook or PDA. The Final Quantity Computations Book may or may not be required, depending on the extent of computations needed to figure quantities.

Division 900 of this Manual explains further, and in more detail, project records required. It is suggested that you study Division 900 before proceeding beyond Sections 108 and 109.

For anyone needing training in the use of Field Manager, the Contracts Section will provide instruction in the application of this software program. You should contact the Contracts Section either directly or through your Supervisor for help.

108.2 Quantities for Progress Payments

After the formalities of contract award have been completed, the Contracts Section will initiate the first payment, which is Mobilization. The Resident will receive either a paper copy of the first estimate paid or an electronic transfer, depending on whether or not Field Manager is being used. The Resident should advise the Contracts Section, preferably before the contract is awarded, whether they will use paper or Field Manager to make progress payments. The Department encourages the use of Field Manager.

It is important to our highway and bridge contractors that they receive prompt and full payment of all monies due them for work satisfactorily performed. Unnecessary delay in paying the Contractor increases his or her cost of doing business, and these costs are ultimately passed on to the Department in the form of higher bid prices on future contracts. The Contractor is to be paid, on each progress estimate, the full estimated value of the work satisfactorily completed. The Resident should not hold payment of money due the Contractor other than what is sufficient to cover work still remaining to be done under a particular item. Quantities should be current to the end of the pay period, particularly for hot mix asphalt items because of the time-dependent nature of the asphalt escalator price adjustment Specifications. If a significant overpayment or underpayment is detected following the submission of a progress estimate, an additional estimate correcting the error should be submitted to the Contracts Section immediately. Section 108.2 of the Specifications further explains procedures for making progress payments.

Contract Specifications require the Department to pay the Contractor a minimum of once a month, but it is policy to make a progress payment every two weeks. The Resident will determine the quantities or the Contractor may submit, as allowed in Section 108.2, a requisition for payment. The Resident will review the figures submitted by the Contractor and so note in the project records. The estimate will then be forwarded to the Contracts Section, either electronically or on a paper copy, for payment. The Contracts Section will process the progress estimate for payment minus a retent. This retained amount is based upon Section 108.3 of the Specifications.

Quantities for progress payment will be estimated with the help of the following guidelines:

Quantities paid by the unit: Progress estimates can be based on a percent of the estimated quantity or on actual field measurements of the work done to date. The Resident is cautioned not to pay too high a percent of the estimated quantity without first checking the Engineer's Estimate for accuracy.

Quantities paid lump sum: The Resident may pay a percent of the bid price, as work progresses; amount paid is dependent on amount of work done. Contract Specifications will state, for some items paid lump sum, what portion to pay as work progresses.

Quantities paid load count: Whether by weight or by volume, quantity to date can be readily determined from daily totals entered in the Final Quantity Book/Item History to Date.

Quantities paid by the hour or force account: Hourly work items and force account work are determined from Daily Reports of Labor and Equipment Rental.

Regardless of the methods used to arrive at quantities for progress payments, the Resident will keep on file the notes and measurements used to document payments.. These records may be needed to explain to Auditors and to the Contractor how Quantities were determined.

108.21 Using the Progress Estimate Form – Paper Copy

Estimates must be made out on the computerized print-out generated by the Contracts Section. The first form the Resident will receive will be labeled "Payment Voucher Summary" number 0001, and it will show partial payment for Item 659.10 - Mobilization. The Resident will also receive, at the same time, "Progress Estimate" number 0002. Present policy is to fax the completed estimate form to the Contracts Section for processing. The resulting "Payment Voucher Summary" and the next "Progress Estimate" will be sent to the Resident as e-mail attachments.

Tracking of funding allocations requires separate cost figures for highway and bridge expenditures, for what is federally participating and federally non-participating, and for town and utility reimbursements. Each category of funds is designated by a number as, for example: 0001 for highway, 0002 for bridge. Categories are assigned by the Project Manager. Work done under the original contract items or added to the project, whether unit price, lump sum or force account, must be coded to the correct category, i.e., highway, bridge, non-participating, etc.

Progress Estimate. Final Quantity Estimate or Final Estimate. During the progress of work, the Resident will place a checkmark on the "Progress Estimate" line. When the project is closed out with the Contracts Section, the "Final Quantity Estimate" line will be checked and the words "Final Quantity Estimate" will be written on the "Comment" line in the upper right-hand corner of the estimate. The Final Estimate will be made out by the Contracts Section when the retent is released and paid off.

Pay Period Ending – Year, Month, Day. The date, entered by the Resident, should be the end date for the period the work has been done. This end date will be as current with the work as is practicable; it will be the middle and/or the last day of the month and not the first day of the next month for the purposes of figuring asphalt escalator price adjustments.

New Items. This section is used to make modifications to the contract, such as: items from one Pin to another Pin under the same contract, new items added by contract modification paid by agreed unit price, lump sum or force account, categories added, or work made non-participating.

Modifications are made as follows:

Catg #: Enter the appropriate four digit category number.

Item # (Or None): The item number can be obtained from the Bid Item Dictionary located at http://www.maine.gov/mdot/contractor-consultant-information/item_dictionary_english.htm . If the item does not appear in the Dictionary, print the word "None" in its place, and write a very brief description of the item or work order in the "Description" column.

Authorized Quantity: Enter the estimated quantity shown on the Work Order. If there is no work order, enter the actual quantity.

Quantity to Date: Enter the quantity you want to pay at this time. Figures can be carried to two decimal places.

Unit Price: Enter the unit price shown on the Work Order, or defined in the contract or in the Specifications.

RWO/EWO: Enter the Work Order or a Resident's Work Order number. To move an existing bid item from one Pin to another Pin on the same contract, use the same item number and use RWO/EWO zero. Items that are to be added to the Schedule of items through existing mechanisms in the contract without a RWO/EXO, such as; rock excavation, structural excavation-major structures-below grade and HMA pay adjustment, can be added by writing SS, standard Specifications, in lieu of a RWO/EXO number.

Description: Enter a description only if "None" was entered as the Item #.

Changes to lump sum items will be done as separate line item entries under the New Items section described above. The lump sum item originally in the contract will show a zero quantity for payment and will be re-entered under New Items with the new price.

The "New Item" procedure, or more pertinently, contract modification, will be processed by the computer and print it in the body of the next estimate at the end of the appropriate code section or in a newly coded section.

Specifications provide a mechanism for paying for certain items added to the contract without the need of a price quote from the Contractor. The following is a list of items commonly used and how to pay for them

<u>To Pay For</u>	<u>Use Item</u>	<u>Unit Price</u>
Rock Excavation	203.20 ComExc	6 X Bid
Struct. Rock Excavation – Drainage	203.20 Com Exc	16 X Bid
Excavation for Slope Blanket	203.20 Com Exc	2 X Bid
Struct Rock Excavation - Major Str	206.082 Str Ea Exc - Major Sit	6 X Bid
Str Ea Exc - Major Str, Below Grade	206.082 Str Ea Exc - Major Str	1 ½ X Bid
Str Rock Exc - Mjr Str, Below Grade	206.092 Str RockExc - Mjr Str	1 ½ X Bid
Aggr Sub Crse - For Foundations	304.10 Aggr Subbase Crse – Grav	2 X Bid
Aggr Sub Crse - Slope Blanket	304.10 Aggr Subbase Crse – Grav	2 X Bid

Stockpiled Materials. This section is used by the Resident to pay for stockpiled materials. Section 108.4 of the Specifications allows for the payment of non-perishable materials stored for future use on the project.

Departmental policy is as follows:

1. Partial payments may be made for certain materials delivered to the project but not yet incorporated into the work.
2. Payment will be shown on the progress estimate as a separate line item entry.
3. Materials will not be paid until the Contractor furnishes the Resident with copies of receipted bills.
4. As the stockpiled material is incorporated into the project and paid under the bid item, the stockpiled quantity should be reduced proportionally.
5. When work involving the stockpiled item is complete, that portion remaining in the stockpile, if any, shall be reduced to a "0" quantity on the progress estimate.

Payment for a stockpiled item is entered on the progress estimate as follows:

Category No.: Enter the appropriate four digit category number. Refer to New Items above, if necessary.

Item No.: Enter the same item number as shown for the pay item in the contract.

Quantity To Date: Enter the quantity, typically 1, or a portion of 1. Figures can be carried to two decimal places.

Unit Price: The unit price for payment under the stockpiled item is determined from receipted bills. The unit price shall equal the dollar amount shown on receipted bills divided by the quantity.

RWO/EWO: MA, material allowance, shall be used designate this item as allowable stockpile payment. After the first estimate is processed with the above information, the stockpiled item will appear in the body of the next estimate directly following the item as originally bid.

Retent Modification. This line is used by the Contracts Section to control the retent status of the Project.

Body of the Estimate. The Resident fills in only the "Quantity to Date" column of this section for each item that has changed since the previous estimate. The total quantity to date may be an increase or a decrease from the previous estimate. Entries will be made in red ink.

Quantities will be entered as follows: whole numbers to the left of the decimal point and tenths and hundredths, if required, to the right of the decimal point. Quantities or percentages can be entered to three decimal places. Numbers are free read; for example, 2 is the same as 2.0 or 2.00.

For quantities with a unit of Lump Sum, show the quantity for progress payment from 0.01 to 1.00. Be careful to place the number on the correct side of the decimal point, i.e., whole numbers to the left and tenths/hundredths to the right.

For items with a unit of Each, show the quantity as a decimal, for example, for a Field Office, 0.33 or 0.67 or 1.00.

If you are adding a Lump Sum item by work order, enter the quantity for payment as 1 L.S. and not 100% L.S. If payment shows as 100% LS, the mistake of paying 100 times the L.S. price can result.

108.22 Using the Progress Estimate Form - Field Manager.

Progress estimates may also be submitted to the Contracts Section electronically, using the Field Manager construction management software program.

To use Field Manager, the Resident must import the database file of his or her project to the Field Manager program. This file will be obtained from the Contracts Section, either by network transfer or by floppy disk. If a Resident is using Field Manager solely for the generation of progress estimates, it will be necessary to generate an IDR (Inspector's Daily Report) posting the quantities for each item that needs to be paid, prior to each progress estimate submittal.

Once the IDRs' have been generated and saved, the next estimate can be added. After adding and before generating the next estimate, it should be checked for accuracy. When the Resident is confident in its accuracy, they then generate it.

When an estimate is generated, a file is automatically created in the "outbox" folder of the "fieldmgr" folder, which is accessed by using "Windows Explorer" or "My Computer". This file should then be transferred to the appropriate project folder located on the Network Neighborhood at Dotaugl/\$com-Cons/Field ManagerProjects for processing by the Contracts Section. If network connections are not possible, the file can be transferred by using a floppy disk.

When the Contracts Section receives the file, it is then processed in the Transport System and a "turnaround" file is created. This file is then picked up by the Resident, as described above, and imported back to the Field Manager program before the next estimate can be generated.

108.3 Quantities for Payment

Method of measurement and payment for items in the contract and for extra work are grouped as follows:

1. Plan Quantities.
2. Lump Sum Quantities.
3. Measured Quantities.

Specifications, under Sections "Method of Measurement" and "Basis of Payment" state how items in the contract are to be paid.

Plan Quantities. Quantity for final payment will be the figure shown in the Schedule of Items as defined in the contract Specifications or as mutually agreed to by the Resident and the Contractor.

If the Specifications state, that for some items, final payment will be based on the quantity shown in the

Schedule of Items, more commonly referred to as the “plan quantity”, that figure will be paid whether the amount is estimated correctly or not. It may be altered only if a design change is made in the field. Example items are: granular borrow backfill and structural excavation for bridge abutments, granular borrow backfill for multi-plate pipes, and shoulder rehabilitation.

Final payment can also be based on plan quantity by agreement between the Resident and the Contractor. Examples are: common excavation and gravel. For such an agreement to take place, two conditions have to be met: (1) the estimated quantity must be reasonably accurate and (2) work done under the item must be to the same limits as shown in the Engineer's Estimate. Reasonably accurate is defined as the Estimate being within five percent of the true figure. The Resident must check the Estimate before proposing the agreement. Errors and changes to limits of work will be taken into consideration and corrections made.

Payment based on “plan quantity” will be documented by notes of inspection and acceptance entered in the project records.

Lump Sum Quantities. Some items in the contract will be designated lump sum for payment as defined in the Specifications. Examples are: field office, structural concrete, and maintenance of traffic. “Lump sum” quantities are documented by notes of inspection and acceptance recorded in the project records.

Measured Quantities. Payment for some items in the contract will be determined from measurements and computations of the actual work done. Sources for measured quantities can be: surface area measurements, three-dimensional volume measurements, average end area measurements, delivery slip measurements, weight measurements, hourly measurements, and force account measurements.

Surface Area Measurements. By Specifications, some items in the contract will be measured and paid based on surface areas. Examples are: clearing, butt joints, shoulder rehab, cold recycled-in-place pavement, and rehabilitation of structural concrete deck slab. Measurements and any sketches will be entered in a bound fieldbook; these can be taken in the field or scaled off the plans or a combination of both. Computations will be done in the same fieldbook or in the Final Quantity Computations Book.

Volume Measurements. Items measured by volume will be specified in the Contract. Examples are: common excavation, borrow, gravel, and concrete. Volumes can be figured using three dimensional field measurements, such as for roadway undercuts, or trench boulders. For large quantities, the average end area method will be used to figure earth excavation, rock excavation, and borrow. Any basic route survey textbook will explain in detail the average end area method. “Typical factors” will be used for figuring aggregate subbase course - gravel. Computer programs are available from the Survey Section to compute borrow and excavation.

If the Resident chooses to figure their own quantities rather than having the Survey Technicians do this, they must consider correcting between stations on curves as on ramps, for example. Also, it must be remembered that the average end area method is not usually accurate between any two stations, particularly if the areas cross sectioned differ considerably. This method is only accurate when at least three cross-sectional areas are used to compute a quantity.

Load Count Measurements, by Volume: Items paid load count will be identified by Special Provision in the Contract. In addition, Specifications allow load count Measurement up to specified maximum limits. Load count is used when it is not practical to measure the quantities by cross-section or by three dimensions.

When materials are measured by load count, the following rules apply

- a) A delivery slip must accompany each load.
- b) The slip must be of a printed format and it must be serially pre-numbered.
- c) It will contain the project number, item description, and truck number.
- d) It must be issued by the truck driver or Foreman present at the site and signed by him or her.
- e) The Inspector or Ticket Taker must witness every load dumped and as evidence, will sign the slip. Partial loads will be noted as: “3/4 full”, for example.

Volume need not be shown on the slip but the Inspector will measure every truck body and enter measurements in a bound fieldbook, signed and dated. The Correct shrinkage factors will be applied when the quantities are figured for payment. Borrow and excavation measured load Count are reduced 10 percent; gravel is reduced 20 percent; concrete, riprap, and loam are measured on a “yard for yard” basis, i.e., no shrinkage or swellage is applied. Refer to the Specifications under the appropriate items for swellage and shrinkage factors.

Load Count Measurements, by Weight: Specifications require that hot mix asphalt items be measured by weight. A delivery slip will accompany each truckload of *mix* delivered to the job. Slips will contain the following information:

- a) Slips will be serially pre-numbered.
- b) Weight of each batch and total weight of the load will show on the slip if the plant weigh system is computerized. If not, only the total weight of the load needs to be shown, and the slip must be signed by a certified weigh master.
- c) The Paving Contractor's name must appear at the heading, in print.
- d) Every slip will be signed by the Ticket Taker.
- e) A Cover slip showing the day's total will be made out and signed by the Contractor's Representative and the Resident.

All weigh slips for hot mix asphalt must be kept in the Resident's office for the duration of the project. When the Resident submits their records to the Contracts Section for final review and close-out, delivery slips may be discarded but the Cover slips will remain with the project records.

The Testing Technician will do some check weighing to verify the accuracy of the scales. Check weighing procedures are explained in Division 100, Section 108, of the Specifications.

Hourly Work Items. Extra work, unforeseen, is sometimes measured and paid by the hour. This work can be paid by using the hourly bid items in the contract, by force account or by a combination of both. Section 109.07, of the Specifications and Section 109 of this Manual explain in detail, rules covering extra work. The Daily Report of Labor and Equipment Rental will be used to document the hours of labor and equipment, and materials used. Authorization for the work by the Resident or by Contract Modification and description will be noted in the Remarks portion of the Report which will be signed by both the Inspector or the Resident and the Contractor's Foreman or Superintendent.

This Section, Quantities for Final Payment, is intended to describe only in general, methods used to measure and pay final quantities. The Resident will refer to Divisions 200 through 600 and 900 for more detailed discussion of the requirements for field documentation, measurement, and payment.

SECTION 109 - WORK ORDERS AND CONTRACT MODIFICATIONS

109.1 General.

Specifications require the Contractor, as directed by the Resident, to perform extra or unforeseen work added to the contract a supplemental agreement, in the form of a work order or contract modification, will be written to authorize and to document the added work.

109.2 Conditions Requiring Work Orders and Contract Modifications.

Work Orders will be initiated and written by the Department, normally by the Resident, and will be signed by the Resident. All Contract Modifications, except those initiated by standard Specifications ie; rock excavation & Quality Assurance Pay Adjustments, will require the signature of the Contractor and may also require the signature of administrative personnel within the Department, as explained further in the next Section. A work order/contract modification will be written when the following conditions are present on the project:

1. Changes in Specifications.
2. Substitution of materials.
3. Changes in Testing Requirements.
4. Changes or extra work within the scope of the contract.
5. Changes in design beyond the scope of the contract.
6. Changes that result in an increase or decrease of 25 percent or more in major items of the contract. A major item is one that exceeds 10 percent of the original contract amount, as awarded. These changes may result in an increase or decrease in unit bid prices. Section 109.1.2 defines a major change.
7. Changes in deadline dates, completion dates, or time extensions not covered elsewhere.
8. Additional driveways, copy to Right of Way team member.
9. Municipal Government, County Government, or other State Agency request for additional work or change in proposed work. If the Agency involved requests additional work, it will be required to pay the non-federal share. The Work Order will clearly state what portion will be paid by the Agency and will be signed by a responsible person from that Agency.

109.3 Contents of the Work Order and Contract Modification.

The following information will be included in the content of the Work Order:

1. Description and location of work.
2. Reason for the change or for the added work.
3. Method of payment, ie existing bid items, contractor quoted work, force account, and benefits to the project.
4. Procedures to be followed by the Contractor. Time constraints, Special Provisions, and Supplemental Specifications are to be made part of the Work Order, as applicable.
5. Price quotations, if required on Contractor Letterhead.
6. Time extensions and reasons for the extra time, if needed. A time extension is not granted unless the work directly affects the Contractor's progress, known as the "critical path".
7. Right-of-way acquisitions or easements if needed.

8. Cost estimates. The Resident will include with the Work Order, his or her estimate of the cost of doing the work, whether it is done by unit price, lump sum, or force account. The Resident should arrive at the cost estimate independently of the Contractor's figures as much as possible. It should be more than just a review of the Contractor's numbers. An excellent source of historical data is the MDOT Bid History by items, which is located at <http://dot0dta1asora14.mdot.w2k.state.me.us:7778/freeprod/pBidHistEnglish.display>.
9. Approvals and signatures. The Contractor's signature shall be on all Work Order; it signifies thier concurrence with performing and payment of the work.. A work order is a supplemental agreement and is not legally part of the original contract unless it contains the signatures of both parties. Work orders not considered to be Residents' Work Orders will be submitted to the Resident's Supervisor for his or her approval and signature. Section 109.4-Resident's Work Orders and 109.5 Work Orders Requiring Supervisor Approval explain further, and in more detail under what conditions work orders are needed.
10. Federal participation. All work orders on federally funded projects must be designated "participating" or "non-participating", i.e., whether or not Federal funds will be expended in the costs involved. In general, the FHW A will participate in the cost of all work orders except when an outside agency such as a Town, County, or a private developer requests the work, or the work is beyond the scope of the contract and is of no direct benefit to the project. Conditions under which FHW A approval is needed are outlined in Section 109.6 of this Manual and what approvals are required,

109.4 Resident's Work Orders.

The Department has authorized the Resident to execute certain work orders at the project level without the approval of their Supervisor, but subject to the following limitations:

1. Each work order is limited to \$10,000.00, not to exceed a cumulative cost of 3 percent of the awarded contract amount.
2. The Resident's authority is limited to construction of the project as intended and designed and does not extend beyond the original scope of the contract.

In addition to the above limitations, the requirements of Section 109.3-Contents of the Work Order will apply, as applicable.

109.5 Work Orders Requiring Supervisor Approval.

The following types of changes are considered to be beyond the limits of the Resident's authority to approve and therefore must be submitted to the Supervisor for concurrence and signature:

1. Changes in geometric design of the project or structural design of bridges, including foundations, and culverts greater than 1.8 m. in diameter.
2. Revision of typical plan cross-sections.
3. The addition, deletion, or relocation of any bridge or other structure which affects the function or intent of the approved design.
4. Changes in Right-of Way
5. The addition of work outside project limits. An exception is work necessary for erosion control, in which case the property owner's permission is needed and put in writing.
6. Changes that alter contract Specifications or other requirements of the contract.
7. Changes that will affect the safety and operation of traffic other than what is allowed under the terms of the contract.
8. Changes that result in an increase or decrease of 25 percent or more in major items of the contract. A major item is one that exceeds 10 percent of the awarded contract amount. These

changes may result in increases or decreases in bid prices. Section 109.1.2, Division 100 of the Specifications - Green Cover, defines a major change.

9. Changes that exceed \$10,000.00 in cost and result in negotiated prices or payment by force account.
10. Changes which may require modification to previously approved environmental permits.
11. Quality Control/Quality Assurance provisions added to the contract.
12. Significant changes in completion dates or other time constraints, if not addressed as part of other work orders.

All of the above situations, the Resident can obtain verbal approval from his or her Supervisor before the Contractor does the work, and will follow up by a signed work order. The Supervisor's approval will be noted on the Work Order.

109.6 Work Orders Requiring Federal Approval.

Every construction season, the Federal Highway Administration will designate certain federally funded projects as "Direct Involvement" projects. On these jobs the FHW A will be involved in the design and construction more so than on other projects, and will do on-site visits on a regular basis. The Resident should ask thier Supervisor or the Designer if his or her job is a Direct Involvement project.

Types of work orders described in Section 109.5 - Work Orders Requiring Supervisor Approval will also need concurrence from the FHW A on Direct Involvement projects. The Resident can obtain Federal approval verbally and so note on the Work Order; this can be done by phone or when the FHWA Engineer visits the project, preferably prior to the work being done. Details of the conversation such as name of the FHW A Engineer and date the conversation took place should be recorded on the Work Order. A copy of the Work Order should be mailed to the FHW A for documentation. Copies of all Resident's Work Orders should also be sent to the FHW A prior to project completion.

109.7 Method of Payment for the Work.

The Specifications, Section 109.7 - Equitable Adjustments to Compensation, specifies that payment for extra work will be made by any one or a combination of the following methods:

1. Agreed Unit Prices.
2. Lump Sum.
3. Force Account.

Agreed Unit Price includes miscellaneous extras such as, but not limited to: labor, materials, equipment, supervision, overtime, travel time, benefits, small tools, transportation, profit, overhead, and other incidental items of work.

Lump Sum is all inclusive and includes extraneous items such as: profit, overhead, regular and overtime labor, supervision, benefits, materials, equipment, and miscellaneous small tools.

If agreement cannot be reached between the Contractor and the Resident on methods 1 or 2, the Contractor must accept payment on a force account basis. Reference is made to Specifications, Sections 109.3 - Extra Work and 109.7.2 - Basis of Payment.

Force Account should be used only when either of the following conditions are present:

1. The extent of the work is difficult to predict, and therefore the cost cannot be estimated with any degree of

accuracy.

2. The Resident and the Contractor cannot come to an agreement on unit prices *or* lump sum prices. Sections 109.7.3, 109.7.4, and 109.7.5 of Division 100 - Specifications, explain in detail how to calculate payment made by force account.

The following is a brief summary of the contents of the Sections noted above:

Materials: actual cost supported by receipted bills plus 15 percent mark-up

Labor: payroll cost for regular and overtime plus 90 percent for laborers and foremen directly involved in the work.

Equipment: "Blue Book" rates, available from the Contracts and Specifications Section.

Mark-Ups: The Prime Contractor is allowed a 5 percent mark-up on a subcontractor's bill for profit and handling of paperwork. When force account work is involved, a 90 percent mark-up is allowed on payroll labor rates and a 15 percent mark-up is allowed on materials. No further mark-ups are permitted.

Regardless which method is used to pay for extra work, whether agreed unit prices, lump sum, or force account, estimating the cost before the work is done is necessary. The Resident should have an idea of what the work will cost before the Contractor submits their price. The figures will be submitted to the Supervisor with the Work Order; other documentation such as receipted bills and price quotes, will remain in the Resident's project files. Back-up documentation and cost estimates for Resident's Work Orders will be kept in the project files on site also.

Division 200 – Earthwork

201.5 Clearing, Tree and Stump Removal- Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping necessary to document and measure clearing and the removal of single trees and stumps.

Field Documentation.

Project Diary, Inspector's Diary/Inspector's Daily Report: The Resident or Inspector will keep notes describing the subcontractor's clearing and selective clearing operations; equipment, personnel, and station to station limits of work will be noted. Workers and equipment need not be recorded every day unless there are frequent changes.

The Contractor, or more commonly the clearing subcontractor, will take the clearing limits from the plans and flag them in the field. If the Resident makes substantial changes or if the limits are not shown on the plans, a clearing list will be made up by the Resident and a copy given to the Contractor. For sample Inspector Diary entry, ref pg 90

Measurement and Payment.

Final quantity for payment can be plan quantity providing the estimated quantity is accurate and work is done as estimated. The Resident will adjust the plan quantity, upward or downward, according to changes made in the field.

Should the Resident find it necessary to establish new limits for the entire job, final pay quantity will be figured from these revised limits flagged in the field. A list of new limits will be made part of the project records.

Whether the Resident makes final payment based on plan quantity or based on a list of revised clearing limits, he/she must substantiate final payment by notes stating that clearing has been completed and accepted to limits flagged. These notes will be made in the Final Quantity Book or in the Construction Book.

Single trees and stumps required to be removed outside clearing areas will be field counted and entered directly in the Final Quantity Book for payment. All measurements will be signed and dated.

Final quantity for payment will be entered in the Final Quantity Book and labeled as such; reference to measurements, clearing limits flagged, and statements of inspection will be made as necessary. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

202.5 Removal of Structures, Obstructions, Pavement - Field Documentation, Measurement and Payment.

This Section describes the recordkeeping necessary to document and measure the removal of structures, pavement, and other existing structures designated to be removed under pay items in Section 202.

Field Documentation.

Project Diary, Inspector's Diary/Inspector's Daily Report: The Resident or Inspector will keep notes describing, for example, demolition of buildings, removal of bridge superstructures and substructures, removal of pavement and other obstructions for which there is a pay item in the contract. Station to station limits of work done by the Contractor, if appropriate, and disposal will be noted. Disposal usually consists of hauling materials to a waste dump, turning over to a State or Town Official, or stockpiling for future use.

The Contractor may need a permit to dispose of certain building materials off the project. The Resident should review the special Provisions of the Contract and contact the Environmental Services Section in Augusta for advice regarding permits.

Special Provisions of the Contract may require that certain components of the existing bridge become property of the State or the Town. The Resident should obtain the signature of the individual receiving such materials.

Measurement and Payment.

Final quantity for payment will be entered in the Final Quantity Book and labeled as such.

For items to be paid lump sum, the Resident will make reference to notes in the Project Diary that document progress of work. A statement of final inspection and acceptance will be made in the Final Quantity Book.

For items to be paid by the unit, such as removal of existing concrete, reference will be made to field measurements. These measurements will be entered in a Construction Book or directly in the Final Quantity Book; all measurements will be signed and dated.

For items to be paid plan quantity, such as removing existing pavement, the estimated quantity must be accurately figured and the actual work limits must be the same as those shown in the Engineer's Estimate. The Resident may have to adjust the Estimate to reflect field changes. As for lump sum items, the Resident will make references to Diary notes verifying that work has been done as estimated. These notes may be made directly in the Final Quantity Book. If the plan quantity is a "throw-in" quantity, i.e., has no basis other than a guess, the work in question will have to be field measured.

Removal of curb, fence, and guardrail will be incidental to the work in general. No separate payment will be made unless there exists specific pay items in the contract for these items.

All calculations and data entries must signed, dated and checked; the checker must sign and date their work.

203.5 Excavation - Field Documentation, Measurement, and Payment.

This section describes the recordkeeping necessary to document and measure excavation. It is recommended that you read Division 900 - Project Records of this Manual to better acquaint yourself with project recordkeeping in general.

Field Documentation.

Project Diary, Inspector's Diary/Inspector's Daily Report. By Specifications, the Contractor is required to place usable excavation within the slopes of the embankment;

no excavation can be hauled off the project without the Resident's approval. It is their responsibility to determine what material can be used on the job, or can be wasted, or stockpiled for future use. This becomes particularly important on a "borrow job" as the amount of wasted excavation directly affects the amount of borrow required. A project is a "borrow job" when material from off the project is required to meet the fill requirements of the contract.

The Resident, or the Inspector if one is assigned to cover excavation items, will keep daily notes of the Contractor's activities relative to earth and rock excavation. It is the Resident's option, whether or not the Inspector is to keep a Diary or Daily Report. The Resident may prefer to have all daily documentation entered directly in the Project Diary. Entries will be made documenting station to station limits of material excavated and locations where placed. It is important to record such information as: material directed to be placed within the core of the embankment or in waste storage areas within embankment limits, or to be stockpiled for future use on the project, or hauled to waste dumps off the job.

Circumstances surrounding the hauling of excavation off the project must be explained, particularly if the project is a borrow job. Material suitable to be placed in the embankment, but wasted without the Resident's permission will be deducted from borrow. Likewise, material only suitable to be placed in waste storage areas outside the core of the embankment, but wasted without permission will also be deducted from borrow. Excess excavation, not required for embankment construction, will be hauled off the project and disposed in waste dumps or other locations approved by the Resident. Excavation that the Contractor stockpiles away from the job for future use on the project will or will not be measured for a second payment, depending on whether or not the Resident has allowed stockpiling. Section 203 of the Specifications, Basis of Payment, allows payment for the rehandling of excavation when it is not possible for the Contractor to do otherwise.

Added undercuts, changes in ditches either in grade or offset, changes in backslopes such as flattening, changes in excavation limits to the approaches, and changes in drives must also be noted and measured for payment.

Grade Check Book. It is a requirement of the Department that the Resident or Inspector spot check the Contractor's grading operations to assure that fine-grading is done within construction tolerances stated in the Specifications. It is recommended although not a requirement, that a "Grade Check Book" be made part of the project records. This book will serve as a convenient and ready reference for checking sub grade, sidewalks, ditches, and backslopes on mainline and side roads, and also for keeping track of what areas the Contractor has fine-graded and what areas have been spot checked. This book should be set up prior to the start of excavation and borrow operations so that the Resident, when in the process of figuring offsets and grades, will discover possible errors in the plans and will also become familiar with the geometrics of the job before work begins.

Whether or not the Resident uses a Grade Check Book, some written documentation must be entered in the project records that the Contractor's fine-grading operations have been checked and approved. These entries may be made in the Project Diary, Inspector's Diary, Daily Report, directly in the Final Quantity Book, or in the Grade Check Book if there is one.

For sample project diary documentation ref page 64, Final Quantity Entries ref page 65 & 66 and Construction Book entries ref page 80,82,85,88 & 92.

Measurement and Payment

Final quantity for payment can be the figure shown in the Schedule of Items in the contract, more frequently called the "plan quantity". The Resident may pay plan quantity as final payment but the following two conditions must be met: the quantity estimated, i.e., the Engineer's Estimate, must be reviewed for accuracy and considered reasonably accurate, and the limits of excavation in the field must approximate those estimated.

Frequently the plan quantity must be adjusted, upward or downward, because of changes made in the field and also because of increases or decreases in quantity of rock excavation estimated. The Engineer's Estimate must be reviewed to assure that rock is not included in the quantity of earth figured. Changes will be measured and recorded directly in the Final Quantity Book or in the Construction Book. Types of changes are described under Field Documentation, above. The Final Quantity Book and the Construction Book are described in Division 900, Section 901.3 of this Manual.

Field changes and added work will be measured by load count, by length, width, and depth, or by original and final cross-sections. Load count will be reduced by 10 percent to arrive at a quantity equivalent to what would be measured in its original position. Computations may be done in the Final Quantity Book, in the Construction Book, or on computation sheets that are part of the Final Quantity Computations Book. If the Resident uses the computer program "Field Manager", the Item History to Date will be generated in lieu of a Final Quantity Book.

Wasting of excavation without the Resident's permission will be measured and deducted from borrow. Measurement will be by load count or by length, width, and depth. Load count excavation will be reduced to 90 percent for deduction purposes; excavation measured in-place off the project will be deducted at 100 percent of quantity so measured.

Muck and grubbing excavated beyond limits shown on the plans will not be measured for payment unless the Resident has authorized a change in the limits. Lateral excavation limits for muck excavation are determined by the intersection of the bottom of the excavation and a 1: 1 slope line drawn down from the finish shoulder break. Borrow placed in over excavated areas will not be deducted unless the excavation beyond lateral limits is deliberate or due to negligence by the Contractor.

All pay quantities will be entered in the Final Quantity Book and referenced to the source document; the final pay quantity will be so labeled. A chain of referencing from the

Final Quantity Book to the original record is always needed. All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.

Rock Excavation: Unlike earth excavation, it is usually the case that the actual quantity of rock excavated will not agree with the Engineer's Estimate. Since soundings are normally taken some distance apart, original ledge cross-sections drawn on the plans do not accurately describe top of ledge, particularly where there is earth overburden. Abrupt changes in elevations are not always detected and also, boulders may be mistaken for solid ledge. This lack of detailed information results in errors in the estimated quantity, and therefore the "plan quantity" cannot be used to make final payment. If earth is paid plan quantity, it must be adjusted according to actual quantity or rock paid.

Rock has to be re-sectioned before removal; but, if the Contractor does not want to strip ledge prior to blasting, top of ledge elevations can be determined, by recording from a known elevation, depth the drill rig has to go before hitting solid rock. Section 203.04 General, requires that the Contractor remove overburden before original cross-sections are taken; it is the Resident's prerogative, therefore, whether or not to allow the Contractor to leave the earth in place before blasting.

Quantity of ledge for payment will be figured from "new" originals to the design cross-section if rock is removed to the construction limits described in Section 203.05 of the Specifications. No payment will be made for rock removed beyond the design cross-sections unless the Resident has directed a change in design. Section 203.18 Method of Measurement, Specifications, defines pay limits. Quantities will be computed by the average end area method. A computer program is available from the Augusta Office, Survey, to figure ledge quantities. Print-outs will be made part of the Final Quantity Computations Book.

Boulders, concrete, solidly mortared masonry, all defined in Section 203.01(b), and small quantities of rock

such as ledge nubbles, will be measured by three dimensions. Boulders encountered at sub grade during excavation operations will be measured as rock excavation and the portion estimated to be above sub grade will be deducted from earth excavation. A "pay" boulder is defined in Section 203.1(b) referred to above.

The situation may arise where ledge is not measured in its original position but is measured load count or in its final location as riprap or rock fill. The quantity so measured will be reduced to 75 percent to determine the amount of rock excavation for payment, the reason being that ledge swells after it is excavated. Measurements and sketches if needed for clarification will be entered in a bound field book, which would be the Construction Book or the Final Quantity Book.

If the job is bid "unclassified", the Resident should make note of the elevation of actual top of ledge where backs lopes are designed on a Y4: 1. In deep ledge cuts, pay limits of earth overburden have to be adjusted depending on the elevation of the ledge.

If the Contractor wastes rock without the Resident's permission and the result is an increase in the amount of borrow needed to meet the fill requirements of the contract, the quantity of rock wasted will be deducted from borrow at 100 percent of the quantity so measured. All measurements and load counts will be entered in a bound field book.

All quantities for payment will be entered in the Final Quantity Book and referenced to the source document. There must always be a trail of reference from the Final Quantity Book to the original record. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work. The final quantity for payment must be labeled as such and signed, checked, and dated.**

203.6 Borrow - Field Documentation, Measurement, and Payment.

This section describes the recordkeeping necessary to document and measure borrow required to meet the fill requirements of the contract.

Field Documentation.

Project Diary, Inspector's Diary/Inspector's Daily Report: Specifications, Section 203.03, Unauthorized Use of Materials, and Section 203.04 General, require that no excavation suitable for embankment construction be hauled off the project. The Resident or the Inspector is to make note of wasted excavation and the nature of it, since the more excavation the Contractor removes from the project, whether authorized or not, the more borrow is needed to construct the embankments.

The Resident or the Inspector will keep daily notes in the Project Diary or the Inspector's Diary/Daily Report relative to the Contractor's operations. Name of the pit that borrow is being hauled from and station to station limits it is being placed, whether in the core of the embankment or in waste storage areas. These areas, which are beyond the 1: 1 slope from the finish shoulder break, are to be reserved for the placement of grubblings or other excavation not suitable for constructing the core of the embankment. The Contractor should not be allowed to place borrow in these areas if there is waste excavation available.

Ideally, the Contractor should complete all excavation operations prior to hauling borrow to the project. If he/she places borrow on the job before all excavation is complete, the Resident should advise the Contractor that he/she is doing so at the risk of having some borrow deducted from the final pay quantity at a later time. As stated previously, no excavation is to be removed from the project if it can be placed either in the core of the embankment or in waste storage areas. The case may arise, usually because traffic has to be maintained on the existing road, where borrow has to be hauled to the job before excavation is complete. The result is that good excavation is wasted; in this situation the Contractor is not penalized. Discussions relating to these matters must be noted in the Diaries.

Borrow diverted for the Contractor's own use must be documented as well; materials used to maintain a haul road or town road, or to grade the equipment yard is all to be deducted from borrow if the material comes from a sectioned pit.

Grade Check Book. As stated previously under Section 203.5 - Excavation, documentation of subgrade checks is a requirement of the Department, whether the operation is in a cut or in a fill. Refer to Section 203.5, Grade Check Book, for further discussion of grade checks.

For sample final quantity book entries ref page 67, for construction book entries ref page 82 and for inspectors diary entries ref page 90 & 91

Measurement and Payment

Borrow: While common excavation can be paid plan quantity, borrow cannot. An exception is when the plans require backfill behind abutments and around multi-plate pipes to be granular borrow or gravel borrow. Specifications, Section 203, Method of Measurement, allow backfill around bridge structures to be paid plan quantity.

When the Designer estimates the quantity of borrow required for the project, he/she makes assumptions that may or may not be representative of what actually happens in the field, particularly on bridge projects. Quantity of excavation estimated to be available for fills is, to some extent, guesswork. Some of the excavation may not be suitable for embankment construction or a situation may exist on the job that makes excavation not available in a timely manner; an example would be traffic maintenance on the existing roadway. The result is that the actual quantity of borrow used on the job is usually not what is estimated.

For these reasons, final quantity of borrow must be determined from actual measurements. The Resident will use the following methods or a combination thereof:

Cross Sections. By Standard Specifications, the contract bid price for borrow is based on the material being

measured in its original position, i.e., in the pit. When measured any other way, the quantity must be adjusted as explained below. Original cross-sections are taken in the pit after the Contractor has stripped the surface and before excavating and hauling operations begin. The Survey Crew should flag the pit limits to alert the equipment operators not to remove material beyond the outer limits of the original cross-sections. Final sections will be taken after the pit has been graded and before grubbing, loam, or other material that can support a growth of grass has been spread. Specifications, Division 105.8.6, addresses pit rehabilitation.

Borrow pushed up and beyond the edge of pit at its perimeter will be deducted from the overall quantity measured for payment. The Survey Section uses a "total station" computer program to take cross-sections and to compute quantities; a print-out of each cross-section is available.

Load Count. It is frequently not practical to figure borrow quantities by cross-sectioning the source. Since nearly all borrow pits are commercial pits and therefore are available to the public, it is nearly impossible for the Contractor to guarantee or even assure the Resident that all material taken out of a sectioned pit will be hauled to the job.

Load count, providing the total quantity measured is less than 5000 cu yd, offers an alternative to the cross-sectional method. There are two problems common to load counted material: trucks not being fully loaded and drivers reporting more trips than what they actually haul. For these reasons, it is advisable to assign an inspector or ticket taker to witness and to collect delivery slips for every load hauled. If, because of lack of personnel, this cannot be done, the Resident or Inspector assigned must do a random check of the Contractor's hauling operations. The Resident should do a "time study", i.e., determine how long it takes for a driver, or more than one, to make a round trip from the pit to the site, and also to visually observe if the trucks are fully loaded.

Section 203.18, Method of Measurement, Specifications, requires that borrow by load count must be reduced to 90 percent of the quantity so measured.

In-Place Measure. A third method of measuring borrow is to compute the quantity in its final position, more commonly called "in-place-measure". This method is particularly suited to bridge projects. The procedure to follow is to figure the total quantity in the embankment from the design template to original ground or to bottom of grubbing limits. The excavation placed in the fill would be deducted from the total embankment and the resulting figure would be swelled 15 percent for final payment.

If earth excavation that is placed in fills is measured in its original position, it will be shrunk 15 percent before being deducted from the total embankment quantity. If it is measured in its final position, i.e., in the embankment, it will be deducted at 100 percent of the quantity so measured. If it is measured load count, it will be shrunk 25 percent before deduction.

If rock excavation that is placed in fills is measured in its original position, it will be swelled 33 percent before being deducted from the total embankment quantity. If it measured in its final position or by load count, it will be deducted at 100 percent of the quantity so measured.

Borrow Deductions. When the Resident computes the final pay quantity of borrow, he/she must determine if any of the material should be excluded from payment.

Unless directed by the Resident, all usable excavation will be placed in the core of the embankment and all waste excavation will be placed in waste storage areas, either as shown on the plan cross-sections or as directed in the field. Only excess excavation can be hauled offsite. Borrow diverted for the Contractor's own use or placed in unauthorized areas will be at their expense. Specifications, Section 203.18 - Method of Measurement, states that material placed outside the embankment will not be eligible for payment.

For deduction purposes, the following situations are to be considered:

Borrow is placed ahead of excavation operations which results in a surplus of excavation: Common excavation and rock excavation wasted will be swelled 15 percent before deduction; reference is made to Section 203.04.

Excavation is hauled off the job instead of being placed in the embankment and then later replaced with borrow because of convenience and ease of operation to the Contractor: The quantity of excavation that could have been placed in the embankment will be deducted from borrow at 100 percent of the quantity so measured.

Excavation is placed in the embankment beyond the design template in concentrated areas as opposed to being distributed throughout all fills, thus creating "fat" slopes: Earth and rock excavation placed beyond the

pay limits defined in Section 203.18 - Method of Measurement, Specifications – 6", will be deducted from borrow at 100 percent of the quantity so measured.

Borrow is placed in embankments beyond the design template, the result being "fat" slopes: Quantity placed beyond the pay limits defined in Section 203.18 will be deducted from borrow. Deduction will be made at 100 percent of the quantity so measured.

Borrow is diverted for the Contractor's own use: Material used to dress the Contractor's equipment yard or a waste dump, or to upgrade a haul road or town road will not be included for payment. Deduction will be made at 115 percent of the quantity so measured; refer to Section 203.03 - Unauthorized Use of Materials, Specifications.

Final quantity for payment will be entered in the Final Quantity Book. Subtotals, and deductions making up the final quantity for payment will be entered in the Final Quantity Book and referenced back to source. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

206.5 Structural Excavation - Field Documentation, Measurement, and Payment.

This Section describes the recordkeeping necessary to document and measure the excavation of earth and rock required to install culverts, bridge abutments, and other structures.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report, Drainage Book, and Construction Book: The Resident or Inspector will keep notes describing the Contractor's excavation operations required for the installation of drainage, bridges, and other structures. These notes will describe location and final disposition of the material, whether on the job or off the job.

Documentation of installation of culverts, underdrain, catch basins, and manholes will be entered in the Project Diary. If the drainage is extensive, a Drainage Book should be set up prior to the work being done and all notes pertaining to drainage work will be entered in the Drainage Book. Reference is made to Division 900 of this Manual for further explanation of the Drainage Book. Undercutting to provide a stable foundation, bedding, excavating rock, and material used to maintain traffic will be noted and measured for payment.

Documentation of construction of bridge abutments, pier footings, wingwalls, retaining walls, multiplate pipes, and other major structures will be entered in the Project Diary or Construction Book. The Construction Book will be used if layout and/or field measurements and sketches are required. Typical measurements would be for rock excavation and undercutting. Division 900 of this Manual explains the Construction Book and how it is used.

Documentation of installation of other miscellaneous minor structures will be entered in the Project Diary or the Construction Book. The Construction Book will be used if layout and measurements for removal of rock or unstable foundation material are required.

For sample construction book entries ref page 84 & 86 and for inspectors diary entries ref page 89,90,91 & 93.

Measurement and Payment.

Drainage and Minor Structures: In areas of full width construction and reconstruction of shoulders, excavation for culverts, catch basins, and other minor structures is incidental from sub grade down to 12" below the flow line of the pipe or bottom of the base. Excavation required below that point for stable foundation or change in grade will be paid under the item "Structural Earth Excavation-Below Grade". That quantity will not be paid plan quantity; this figure is a "throw-in" and is not necessarily based on work anticipated to be done. Quantity for payment must be field measured. Measurements and sketches will be entered in the Drainage Book, signed and dated. Depth will be as directed by the Resident and width will be the limits defined in Section 206.04 of the Specifications and sheet #605(1) of the Standard Details for underdrain.

Rock excavation for drainage and other minor structures will be the quantity actually excavated to the pay limits defined in Section 206.04 of the Specifications. Measurements and sketches will be entered in the Drainage Book, signed and dated.

Bedding material will be computed to depth authorized beginning at the flow line of the pipe or bottom of the base in the case of catch basins; width will be as defined in the Specifications.

Major Structures: Section 206.04 of the Specifications states that final payment for earth excavated for bridge abutments and piers will be the quantity shown on the plans unless the structure is founded on ledge. In this case payment for earth and rock removed would be based on field measurements. Since top of ledge shown on the plans is not accurate, new ledge originals would be needed. Original cross-sections will be taken at right angles to the centerline of bearing at close intervals.

Quantity of earth will be figured vertically from original ground or roadway sub grade to top of ledge and horizontally to pay limits shown on the plans or to 18" beyond the footing. If actual top of ledge is lower than the elevation shown on the plans, earth excavated below that elevation will be paid at 1 1/2 times the bid price for structural earth excavation. Typically, elevation of top of ledge is shown on the plans as, for example: 26 +/- . Such a designation would be interpreted to mean that only earth excavated below elevation 25 would be paid at 1 1/2 times the price. Another example would be: if the elevation shown were 26.0+/-, earth excavated below 25.9 would be paid at 1 1/2 times the price. Likewise, if the elevation of bottom of footing is lowered due to change in design, excavation below, the original elevation shown would also be paid at 1 1/2 times the price.

If the plans call for excavating into ledge for the footing, the Contractor is allowed a pay tolerance of up to 12"

below the elevation of the bottom of the footing. Rock excavated and concrete placed below the 12" tolerance will not be paid. If the Resident directs the Contractor to remove rock below bottom of footing elevation because of a change in design or because of the soft nature of the ledge, it will be paid at 1 ½ times the bid price for structural rock excavation.

"Pay" boulders, defined in Section 203.01(b) of the Specifications, that are found partly within the excavation limits for drainage and major structures will be measured and computed for payment as follows: that portion estimated to be within the structural excavation pay lines will be paid as such and the remainder will be paid as common rock excavation.

There will be no payment for rehandling structural excavation; the bid price includes excavating, rehandling as many times as necessary, and placing in its final position, whether it be in the embankment, waste storage areas, or off the project.

Final quantities of structural earth excavation-below grade and structural rock excavation will be entered in the Final Quantity Book and labeled as such. References will be made, as appropriate, to the Drainage Book or Construction Book for measurements and computations.

All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.

Division 300 – Bases

304.5 Aggregate Base and Subbase - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping necessary to document and measure aggregate base and subbase on the project.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's aggregate base and subbase operations. Information recorded will be: name of pit the material is coming from, station to station limits where it is placed, and whether placed in one lift or two lifts.

The Resident is responsible for quality assurance testing; he/she must assure that a Technician from the Department is available to do the testing required. Tests the Contractor may take are not to be counted toward the total number needed; these tests are to be considered as quality control for the Contractor's benefit only. Reference is made to Division 900, Section 901.4, of this Manual for further discussion of "Minimum Testing requirements".

Gravel can fail gradation or density or both. Corrective action directed by the Resident will be documented; more compactive effort may be required or material failing in gradation may have to be removed.

Sections 304.03 and 304.04 of the Specifications requires the Contractor to place the material in two lifts, but he/she can be allowed to place it in one. Gravel placed in one lift must meet density requirements full depth and therefore the lower portion of the one lift will be tested. If it fails, the Contractor must take whatever action necessary to attain passing density full depth.

Grade Check Book: The Department requires that the Resident or Inspector do random checks of sub grade and top of gravel to assure that the Contractor is placing gravel within construction tolerances. Checks should be done between stations as well as on station. Reference is made to Division 900, Section 901.3 and to Division 200, Section 203.5 for further discussion of the Grade Check book.

For sample project diary entries ref page 64, for final quantity book entries ref page 69, for construction book entries ref page 81 & 82 and for inspectors diary entries ref page 91 & 92.

Measurement and Payment.

Final quantity for aggregate base and subbase can be figured by anyone or a combination of the following methods:

Plan Quantity. Quantity for payment can be plan quantity providing the Resident reviews Engineer's Estimate for accuracy and the work is done to the limits estimated. It is often the situation that side streets and mainline approaches and drives are changed to match field conditions; the Estimate should be adjusted to meet these field conditions as necessary. Payment by plan quantity shall be documented by written agreement in the form of a Resident's Work Order. The agreement should state that the plan quantity will be adjusted upward or downward if changes are made in the field. Changes will be measured by three dimensions or load count described below.

In-Place Measurement. If the estimated quantity has no basis, commonly referred to as a "throw in" figure, gravel for the project will have to be refigured. Typical factors should be used for mainline travelway and shoulders where possible. Three dimensional measurements and/or plan dimensions can be used for drives, approaches and intersection areas. Gravel used to backfill undercut areas or to provide bedding for drainage can also be measured and computed by three dimensions to limits authorized. For drainage, depth will be figured from flow line of the pipe and width will be figured to the lateral pay limits defined in Section 206.04 of the Specifications.

Load Count. Gravel can be measured load count if: there is not a large quantity involved and the work involves mostly traffic maintenance or matching into, existing material. By Specifications, gravel measured load count will be reduced 20 percent for payment to arrive at an equivalent quantity measured in its final position. Refer to Section 304.06 of the Specifications for clarification.

Final quantity for payment will be entered in the Final Quantity Book and labeled as such. Reference will be made to grade checks, measurements, load count delivery slips, and computations in the project records, as necessary. Measurements and delivery slip totals must be entered in a bound book which can be the Final Quantity Book or the Construction Book. Reference is made to Division 900, Section 901.3 of this Manual for further discussion of field books. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

307, 309 & 310 Recycled Pavement - Field documentation. Measurement, and Payment.

This Section describes the recordkeeping necessary to document and measure the recycling of existing pavement.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's operations on the road and in the plant.

Full Depth Recycled Pavement. Field notes will include weather conditions, station to station limits of work, and description of equipment used: pulverizer, grader/spreader, rollers. The Inspector will also document inspection procedures and check measurements of work done, such as: depth of grinding operations, cross-slope, and density of the finished product. Any added aggregate or recycled pavement used as necessary to restore cross-slope will also be noted, tested, and measured for payment if required.

Plant Mixed Recycled Pavement, Foamed Asphalt & CIP require a QC/QA plan to be submitted. Field notes will be the same as for recycled pavement with additional documentation regarding plant inspections.

For sample final quantity book entries ref page 70.

Method of Measurement.

Final quantity of recycled pavement can be figured by either of the two following methods:

Plan Quantity. Quantity for payment can be "plan quantity" providing the estimated quantity shown in the Schedule of Items is reasonably accurate and work is done to the limits estimated. Payment by plan quantity should be documented by written agreement such as a memo or Resident's Work Order, between the Resident and the Contractor.

The agreement must stipulate that the plan quantity will be adjusted upward or downward if changes are made in the field. Quantities paid "plan quantity" will be documented by notes of inspection and acceptance entered in the Project Diary, or directly in the Final Quantity Book.

In-Place Measurement. If the estimated quantity is not figured accurately enough to pay as a final figure, the final pay quantity will be determined from field measurements, or will be refigured from the plans, or a combination of both. Length will be distance between stations and width will be field measured. Frequency of width measurements will depend on road width consistency. All measurements, and sketches if required, will be recorded in a Construction Book or directly in the final Quantity Book and signed and dated. Irregularly shaped areas such as ramp and side street approaches and intersections will be broken down into basic geometric shapes and measured by length and width. Dimensions taken from the plans and corresponding notes of inspection and acceptance also recorded in a Construction Book or the Final Quantity Book.

Added Material. If specified in the contract, material added to maintain cross-slope in areas not designated on the plans or in the construction notes will be paid separately under the item used. Measurement will be by load count reduced by 20 percent for final payment. Every load will be documented by a delivery slip that has been signed and dated at the point of delivery by the Resident or Inspector. Daily totals will be entered in the Final Quantity Book. Refer to Section 304.06 - Method of Measurement of the Specifications and Special Provisions for further explanation of shrinkage factors.

The Special Provisions, Section 108 should also be reviewed for the incorporation of Asphalt Pay Adjustment and the procedure how to determine the adjustment.

Final Quantity. Final quantity for payment will be entered in the Final Quantity Book and so labeled. References will be made to statements of inspection and acceptance, plan dimensions, field measurements, and delivery slips, as necessary. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

Division 400 – Pavements

401.5 Hot Mix Asphalt Pavement - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping necessary to document and measure hot mix asphalt placed on the project.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report, Paving Report, Tally Sheet, Test and Data Reports: The Resident or Paving Inspector will document on a daily basis, the Contractor's paving operations. He/she will keep notes regarding: station to station limits of paving, inspection problems, observations regarding quality control, equipment, personnel, weather, and temperatures. It is strongly suggested that the Paving Inspector use the Paving Report. This document has a preprinted format that serves as a reminder to record all of this information. This report is to be filled in on a daily basis, prior to the start of the next day. Ticket taker will keep a tally of all loads delivered by noting delivery slip number, the location where placed and sign the delivery slip upon delivery. The primary purpose of the Truck Tally Sheet is to control the yield and to determine which loads are involved if a problem area develops. If the Resident can isolate the loads, he/she can correlate the questionable material with specific batching data on record in the plant and in this way the cause for the bad mix may be determined.

Contract Specifications state that quality of mix will be controlled by following the "QC/QA" requirements of Sections 401 and 106 of the Specifications. The Contractor will provide quality control by testing and inspection and will propose their quality control procedures by submitting a Quality Control Plan to the Resident for Departmental approval. Specifications, Section 401 outline the basic requirements of the Plan and also procedures for quality assurance testing that the Department will perform.

Section 401 of the Special Provisions defines the quality control and quality assurance requirements at three levels: Methods A, B, and C. Method A provides for pay incentives and disincentives. Method B provides for disincentives only. Quality control and quality assurance procedures are the same for Methods A and B.

Method C is used for mixes with quantities less than 250 tons, sidewalks, drives, and other mixes behind the curb that are generally referred to as "hand-placed". Quality control requirements are not as stringent as for Methods A and B. Section 401 defines the types and frequencies of QA tests to be taken.

Special Provision, Section 403, designates which method is to be used for a particular pavement item, usually based on quantity. To better understand quality control, quality assurance, and Methods A, B, and C, the contents of Specifications - Section 401 and Special Provision - Section 403 should be thoroughly read by the Resident and the Paving Inspector before paving operations begin. All quality control records and quality assurance records will be filed together in the Testing File daily.

For sample final quantity book entries ref page 71 and for inspectors diary entries ref page 93.

Measurement and Payment.

The delivery slip for each load of hot mix asphalt delivered to the project will be signed at the point of delivery by the Resident, Inspector or Ticket Taker. Daily total quantities for each pay item will be documented by a cover slip signed by the Contractor's Representative and the Resident or Inspector, and will be entered in the Final Quantity Book; all entries will be signed and dated. Delivery slips will be kept in the Resident's field office until the records are submitted to the Project Review Unit for final review. At that time the weigh slips may be discarded, but the cover slips will be kept as part of the project records.

Occasionally a load will be split between two pay items. Quantities will be determined by fractions noted on the slip, example: "pay 1/3 load as hand-placed". A rejected load will be documented by a note on the slip stating the reason such as: segregation, dry load, or low temperature.

Check weighing to verify the accuracy of the scales will be done twice during every five days of production. Section 401.085 of the Specifications explains the check weighing procedures.

Pay factor computations for incentives, disincentives, and penalties will be part of the Testing File but final cost figures will be entered in the Final Quantity Book with the digits 01 and descriptions added to the pertinent pay item number, for example: 403.20801 Incentive-HMA-9.5 mm.

Final quantity for payment will be figured in the Final Quantity Book from daily totals. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

Division 500 – Structures

501.5 Foundation Piles - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping required to document the installation and measurement of foundation piles.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Pile Driving Inspector will keep notes describing the Contractor's pile driving operations; personnel, equipment, working hours, and which abutment or pier being worked will be recorded.

The Resident will make a note in the Project Diary of the following: approval of the pile driving equipment, approval of driving procedures, approval of driving hammer, inspection and approval of pipe piles before Contractor places concrete. Sections 501.03 - Equipment and 501.04 - Driving Procedures and Tolerances of the Specifications address, in detail, equipment and driving of piles.

The Resident will document static and dynamic load testing. Static load testing: approval of testing procedures and the results will be recorded in the Project diary. Dynamic load testing: a report of test results will be submitted to the Resident and placed in the Testing File. Specifications, Section 501.07 - Pile Testing and Acceptance explains the requirements of load testing.

Pile tips and pile splicing procedures must be approved by the Resident. Notes will be made in the Project diary. Reference is made to Section 501.09 of the Specifications.

The Resident or the Pile Driving Inspector will complete the following records and make them part of the Final Quantity Computations Book:

Pile Layout Diagram. The layout diagram is a sketch of the outline of the foundation and the batter, identification, and location of each pile by number.

Pile Driving Report. This report identifies each pile driven by number, location, driving length, pay length, and cut-off length. It also gives the type of hammer and other data pertinent to the operation. This report must be kept current with the work and must be signed by the Inspector.

Report of Record Pile. This report is a driving log of a pile; it is an indication of the energy required and the resistance encountered during the driving operation. Two record piles are required for each foundation unit. These reports must also be signed and dated.

For sample project diary entries ref page 87 and for inspectors diary entries ref page 94.

Measurement and Payment.

Foundation Piles. Payment for piles furnished will be based on quantities ordered in writing by the Resident. Cut-off piles in excess of 10 feet for each piece will become property of the Department. A Special Provision in the Contract will designate how the excess will be disposed.

Payment for piles installed will be determined from pay lengths shown on the Pile Driving Report; pay length is the difference between the driving length and the cut-off length. In the case of pipe piles, there is no payment for concrete in them.

Splices and Tips. These will be recorded for payment on the Pile Driving Report.

Loading Tests. These tests will be paid per each; reference will be made to appropriate Diary notes and test results for documentation of quantities paid.

All final quantities for payment for piles delivered, piles driven, load tests, splices, and tips will be entered in the Final Quantity Book. References to documentation of quantities will be made to pile driving reports, to test results, and to entries in the Project Diary or Inspector's Diary for statements of approval. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

502.5 Structural Concrete - Field Documentation Measurement and Payment.

This Section describes the recordkeeping necessary to document and measure concrete for major and minor structures.

Field Documentation. -

Project Diary, inspector's Diary/Daily Report: The Resident or inspector will keep notes describing the Contractor's pre-placement and placement activities, such as: excavation and preparation for erection of forms and installation of reinforcing steel. Equipment, personnel, weather, temperatures, and location of work site will be recorded also.

It is policy of the Department that the Inspector document in writing the inspection and approval of forms and reinforcing steel before a concrete placement. The Contractor is also required to do a "dry run" with the screed machine before the deck placement. The Inspector will note their observations during the dry run and also measure and record thickness of the deck slab as the concrete is placed. Notes can be entered in the Project Diary or Inspector's Diary or directly in the Final Quantity Book.

Concrete for sign bases, light bases, traffic signal bases, and other minor structures will be documented by Inspector's statements verifying that placement of forms, steel cages or mesh, anchor rods, and conduit have been checked and accepted.

For sample final quantity book entries ref page 72 & 73, for construction book entries ref page 84 and for inspectors diary entries ref page 89.

Measurement and Payment.

Final quantity for payment will be lump sum or by the cubic meter computed in-place as specified in the Schedule of Items in the Contract Book.

Lump Sum. This method of payment is specified in the bid schedule if the dimensions of the structure, be it abutment, pier, or deck, are clearly defined and not subject to change in the field. Final quantity for payment will be entered in the Final Quantity Book as "Lump Sum" and reference will be made to inspection and approval of forms, dry run of screed machine, check of the slab thickness, as appropriate.

Cubic Meter. Concrete paid by the unit is usually specified when the dimensions of the structure are not clearly identified, as when the footing is on ledge, or when the work consists of extending an existing abutment or placing a new footing on dry laid granite. In this situation, concrete is measured by delivery slip. The Inspector will sign the slip when the concrete is delivered to the site and he/she will also note amount wasted if any. The note will say, for example: "wasted 114 cu meter", Quantity of concrete wasted shall be co-signed by the Contractor's Representative to show agreement with the amount in question. Delivery slip daily totals will be entered in the Final Quantity Book. The concrete may also be measured in-place providing a sufficient number of field measurements are taken; measurements will be entered in the Construction Book. All delivery slip totals and field measurements will be signed and dated.

Seal Concrete. When the item Structural Concrete - Placed Under Water, also known as "seal concrete", is bid by the cubic meter, and the distribution slab above it, part of the item Structural Concrete - Piers or Abutments, is also bid by the cubic meter, the following shall apply:

1. Top of seal is below plan elevation: Quantity of distribution slab is figured from plan measurements for payment and the difference between the plan measured quantity and the delivery slip quantity is paid as seal concrete. Presumably the delivery slip quantity for the distribution slab will be greater than the plan measured quantity.
2. Top of seal is above plan elevation: Quantity of distribution slab is determined from delivery slips for payment and the difference between the plan measured quantity and the delivery slip quantity is paid as seal concrete. Presumably in this case, the delivery slip quantity for the distribution slab will be less than the plan measured quantity.

To determine whether top of seal is above or below plan elevation, check shots will have to be taken to determine the approximate elevation of the seal.

Occasionally the Schedule of Items will specify concrete to be paid by the cubic meter as opposed to lump

sum even though the dimensions of the substructure are clearly shown on the plans and will not change in the field. In this situation the concrete can be paid plan quantity providing the estimated amount is figured to the same degree of accuracy as it would be for final payment. The Resident will check the calculations and so note in the Final Quantity Book.

Where a footing is founded on ledge, concrete placed more than 12" below the designated bottom elevation of the footing will not be included in the pay quantity of concrete figured in-place. Likewise, if the concrete is figured by load count, quantity below the 12" line will be figured in-place and deducted from the total delivery slip quantity.

Since final ledge cross-sections will have already been taken to figure structural rock excavation, these same cross-sections will be used to compute quantity of concrete for payment or to figure quantity for deduction.

If the item "concrete fill" is added to the contract by work order, the lateral pay limits of the fill must be specified in the work order and the final quantity must reflect a deduction or non-payment for concrete placed beyond pay limits.

Contract Specifications stipulate that quality of concrete will be controlled by following the "QC/QA" requirements of Sections 502 and 1 06 of the Specifications. The Contractor will propose their quality control procedures by submitting a Quality Control Plan to the Department for approval. The Contractor will do quality control testing and the Resident will do quality assurance testing.

There are basically three levels of QC/QA: Method A, Method B, and "Non-QC/QA "; Special Provisions will specify the method for each item. Method A provides for incentives and disincentives; Method B provides for disincentives only. The Non- QC/QA method is used when the concrete in question must only meet the minimum quality standards in the Specifications. Examples are: armored joint repairs, surface repairs to wingwalls, bridge decks, abutments, piers, or box culverts, and modifications to concrete endposts. Cylinder breaks below what is allowed in the Specifications will be reason for either rejection of the concrete, or negotiation of a price credit. Quality control and quality assurance are explained in detail in Sections 106 and 502 of the Specifications.

Final quantity for payment will be entered in the Final Quantity Book: References will be made to source documentation, such as: Final Quantity Computations Book, delivery slips, form checks, and reinforcing steel checks. Delivery slip quantities and form checks, and re-steel checks will be entered in the Construction Book or directly in the Final Quantity Book.

Quality control records, quality assurance records, and pay factor computations will be filed in the Testing File for each day's placement. Incentive and disincentive computations and cost figures will be entered in the Final Quantity Book with digits 01 and descriptions added to the pertinent pay item number, for example: 502.2101 Incentive-Str Conc Abuts & Ret Walls. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

503.5 Reinforcing Steel - Field documentation Measurement and Payment.

This section describes the recordkeeping necessary to document and measure reinforcing steel delivered and placed in the structure.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's progress on this item; also to be noted are crew, equipment, weather, and location work is taking place, i.e., abutment, footing, pier, deck, or sign base.

When the steel is delivered, the Resident/Inspector will inspect the material for condition and proper storage. He/she will record inspection and acceptance in the Project Diary or directly in the Final Quantity Book. Delivery invoices will be kept as part of the project records.

When the Contractor places the re-steel, the Resident/Inspector will inspect for bar size, length, splice assembly, and proper positioning within the forms. He/she will document acceptance of reinforcing steel and splices by notes entered in the Project Diary or directly in the Final Quantity Book. Inspection will also be noted in the project records for re-steel placed in minor structures, such as traffic signal bases, sign bases, or concrete sidewalks.

Measurement and Payment.

Quantity for payment of reinforcing steel delivered and placed will be the quantity shown on the Steel Schedule in the contract plans, checked and corrected as necessary.

Final quantities of re-steel will be entered in the Final Quantity Book, signed and dated. Reference will be made to the Steel Schedule, computations in the Final Quantity Computations Book, and to statements of inspection and acceptance in the Project Diary or other project records.

Final quantity of splices will be entered in the Final Quantity Book. Reference will be made to the plans for the number paid; additional splices requested by the Contractor and approved by the Resident will not be measured for payment. Reference will also be made to Project Diary entries for documentation of splices installed and accepted.

Steel mesh placed in sidewalks, sign bases and traffic signal bases will not be measured for payment but is included in the bid price per unit. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

504.5 Structural Steel - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping necessary to document payment, delivery, and erection of structural steel.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will record, on a daily basis, the Contractor's progress in the erection of structural steel. He/she will keep notes regarding, but not limited to: the installation of beams, splices, diaphragms, and bearing assemblies. Crew, equipment, weather, and location, i.e., which span, girder, or abutment being worked on and lot numbers of materials will be noted.

Documentation for payment will be as follows:

Fabrication and Delivery. When the steel is brought on the job, the Resident and or Inspector will identify and record which girders, braces, bearing assemblies, and other hardware are delivered, and he/she will inspect for fabricating and shipping defects. Items to consider are:

1. Full bearing of bearing stiffeners.
2. Web buckles in welded girders within tolerance.
3. Welds in proper locations.
4. Burrs and roughness removed.
5. No loose or scaly rust in splice areas.

Notes will be made in the Project Diary or directly in the Final Quantity Book, signed and dated.

The Department will perform through the services of a private Testing Agency, shop and mill inspection of structural steel fabrication. The Fabrication Engineer will forward a copy of the Inspection Reports to the Resident. In addition, the Inspector should become familiar with the many other details of inspection explained in Section 504.4 of this Manual.

Erection. The following tests will be done and documented in the project records at the time steel is erected:

Rotational Capacity Test. Specifications, Sections 504.28 and 713.02 require that a "rotational capacity" be done on two sets of nuts, bolts, and washers in every lot delivered to the project. This test determines the compatibility of the components. The results will be noted in the Project Diary or directly in the Final Quantity Book.

Bolt Tension Test. Specifications require the Contractor to install and test bolt tension in girder splice connections and diaphragm/cross-brace connections using the following methods:

1. Calibrated Wrench Method. If the Contractor makes use of a calibrated torque wrench to do QC testing, the Resident or Inspector will use the Calibrated Wrench Method to perform QA testing. Ten percent of all bolts or a minimum of two bolts per connection in all girder splices will be checked and noted on the splice inspection diagram.
2. Turn of the Nut Method. If the Contractor uses this method, the Inspector will witness the tightening of all bolts in the girder splices and so note on the splice inspection diagram. This inspection procedure should be verified weekly with a calibrated torque wrench. For diaphragm and cross-brace connections, the Inspector will observe the Contractor doing the turn of the nut method is acceptable; other test procedures are not required.
3. DTI Method. The DTI method of installation will be checked by the Inspector with a "feeler gauge". The Inspector will further verify the accuracy of the feeler gauge by checking bolt tension with a calibrated torque wrench on a weekly basis.
4. Inspection of Tension Control Bolts. The Inspector will inspect the bolts to verify that the spline has been snapped off. A spot check with the calibrated torque wrench will be done every week as required for methods noted above.

Departmental policy requires that the Inspector verify bolt tension in girder splices and cross-brace and diaphragm connections. Any of the above methods will be used and the results will be recorded in the Project Diary, Construction Book, or in the Final Quantity Book. On a multi-span structure, a splice layout diagram is suggested to keep account, on a daily basis, of which splices have been checked and accepted; notes will be made directly on the diagram. This sheet will become part of the project records. An overview of the structural steel layout, such as the one found in the contract plans may be used.

Measurement and Payment.

Final quantity for payment will be entered in the Final Quantity Book; references will be made to field inspections, rotational capacity tests, bolt tension tests, and other notes of inspection. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

505.5 Shear Connectors - Field documentation. Measurement. and Payment.

This Section describes the recordkeeping necessary to document and measure for payment, stud welded shear connectors.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes documenting the Contractor's progress on this item; crew, equipment, and location of work, i.e., which span and which girder, will be noted. Field welding will be done by a prequalified welder, as required under Section 504.49 of the Specifications.

The Resident or Inspector will inspect all shear connectors to assure an acceptable 360 degree weld and will also perform the "bend test" described in Section 505.04 of the Specifications. These inspection procedures will be recorded in the Project Diary or directly in the Final Quantity Book.

Measurement and Payment.

Quantity for payment, lump sum, will be recorded in the Final Quantity Book, signed and dated. Reference will be made to statements of inspection and acceptance in the project records. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

507.5 Railings - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping necessary to document and measure for payment, the installation of bridge railing.

Field Documentation

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes documenting the Contractor's progress on this item. Crew, equipment, and location of work will be noted, for example: which span if a multi-span structure, and which side, left or right, will be recorded.

Measurement and Payment.

If the item is paid lump sum, notes of inspection and acceptance will be made in the Project Diary or directly in the Final Quantity Book. If the item is paid plan quantity, the Resident will check the accuracy of the computations and will refigure the quantity from the plans if necessary. He/she will also make entries in the Project Diary or Final Quantity Book relative to inspection and acceptance. If the item is paid by the unit, field measurements will be entered in the Construction Book or the Final Quantity Book, signed and dated.

Final quantity for payment will be entered in the Final Quantity Book, and referenced to source documentation, such as: field measurements, plan calculations, or statements of inspection and acceptance, as appropriate. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

508.5 Membrane Waterproofing - Field Documentation. Inspection and Payment.

This Section describes the recordkeeping required to document and measure the installation of membrane waterproofing on bridge decks.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's preparation and installation of membrane waterproofing on bridge decks. Crew, equipment, weather conditions, and temperatures will be noted. Manufacturers' names of primer, membrane, and mastic will be recorded and verified with the Department's Approved List before approval for use. Acceptance of the item after work is completed will be recorded in the Project Diary.

For sample inspectors diary entries ref page 93

Measurement and Payment.

Final quantity for payment will be lump sum entered in the Final Quantity Book. Reference will be made to notes of inspection and final acceptance. **All calculations and data entries must be signed, dated, and checked; the checker must sign and their entries.**

509.5 Structural Plat Pipe and Arches-Field documentation, Measurement and Payment.

This Section describes the recordkeeping required to document and measure the assembly and installation of structural plate pipes and pipe arches.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's progress of the installation of the structural plate pipe. Notes will be made regarding, but not limited to: assembly in the dry or in the trench, excavation, bedding, torque checks, stream diversion, cofferdams, and backfilling. Crew, equipment, and weather will also be noted.

To document payment for the item, the Resident/Inspector will inspect and note acceptance of bedding and will check the tension in 10 % of the bolts using a calibrated torque wrench. Bolts are to be torqued to 100-300 ft-lbs. A wrench should be available from the Contractor.

For sample inspectors diary entries ref page 94.

Measurement and Payment

Final quantity for payment will be lump sum and will be entered in the Final Quantity Book, signed and dated. Reference will be made to notes in the Project Diary that document inspection and acceptance of bedding and the checking of bolt tension. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

There is no separate payment for excavation. Sections 206.01 (a) and 206.04(a) of the Specifications state that payment for excavation is incidental to the price bid for the structure. The quantity of granular borrow for payment will be that shown on the plans; reference is made to Section 203.18, second paragraph, of the Specifications.

510.5 Special Detour - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping required to document and measure for payment the installation of a detour on the project.

Field Documentation.

Project Diary, Inspector's Diary/Inspector's Daily Report: The Resident or Inspector will keep notes describing the Contractor's progress in the construction of the detour. The Inspector must be familiar with the contract Specifications, Section 510, to assure that the detour has been designed and constructed according to plan. Acceptance, maintenance, satisfactory removal, and clean-up of the site will be noted. Crew, equipment, and weather conditions will also be recorded.

Measurement and Payment.

Final quantity for payment will be lump sum and will be entered in the Final Quantity Book, signed, and dated. Reference will be made to notes of inspection, acceptance, and disposal recorded in the project records. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

Departmental policy is: If, during removal of the detour, the Contractor uses some of the excavation as permanent fill and if the use of this excavation does not cause a waste of usable excavation elsewhere on the project, the material in question will be measured and paid as common borrow.

511.5 Cofferdams - Field Documentation. Measurement. and Payment.

This Section describes the recordkeeping required to document and measure the installation, maintenance, and removal of cofferdams.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep a record describing the inspection and acceptance Contractor's work and submittal, approval and adherence to their Water Pollution Control Plan. Type and size of cofferdam, type of pumping operations and adequacy of the sedimentation basin and sedimentation control will be noted.

For sample final quantity book entries ref page 76, inspectors diary entries ref page 93 & 94.

Measurement and Payment.

Final Quantity Book: Final quantity for payment, lump sum, will be entered in the Final Quantity Book, signed and dated. References will be made to Project Diary entries that document acceptance of the item. The item is not accepted until the removal and clean-up of the cofferdam(s), Sedimentation Basin(s), and pump(s) has been disposed in a manner satisfactory to the Resident. Payment is made regardless of the extent of work required to build the cofferdam. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

513.05 Slope Protection - Field Documentation, Measurement, and Payment.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's progress on this item. Preparation for placing concrete or crushed stone as called for on the plans, i.e., setting grades, excavating as necessary, compacting the slope, as well as crew, equipment and weather will be recorded.

Measurement and Payment.

Final Quantity Book: Final quantity for payment will be entered in the Final Quantity Book and referenced to field measurements or plan dimensions. Measurements and calculations will be entered in the Construction Book, signed and dated. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

515.5 Protective Coating for Concrete, Surfaces - Field Documentation. Measurement. and Payment.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will record the Contractor's work activities on this item such as surface preparation and condition before applications, note the name of manufacturers material being used, verification of the material with the Departments Approved Product list, application rate of each coat, and notes of inspection and acceptance, crew, equipment, time of each application and weather conditions will also be documented.

Measurement and Payment.

Final Quantity Book: Final quantity for payment will be by the square meter or lump sum. Total units will be computed from field measurements or from dimensions scaled from the plans. Measurements, dimensions, and calculations will be entered in the Construction Book and the total transferred to the Final Quantity Book. Lump sum will be entered directly in the Final Quantity Book.

Final quantity for payment will be signed and dated. References will be made to measurements, calculations, and notes of inspection and final acceptance. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

518.5 Rehabilitation of Structural Concrete - Field Documentation. Measurement. and Payment.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's activities on this item; crew, equipment, weather conditions, location of work, i.e., which lane and which span if appropriate, will be recorded. Also to be documented are: name brand of patching material, bonding grout, and verification of the material with the Departments Approved Product list.

Measurement and Payment.

Final Quantity Book: Final quantity for payment will be determined from field measurements recorded in the Construction Book, signed and dated. Rehabilitation of Structural Concrete can involve one or a combination of three items: above re-steel, to re- steel, or below re-steel. If these items overlap in area, the item involving the largest surface area should be measured first and should be all encompassing, i.e., include the other items. These other items should then be measured after and deducted from the largest area. This method of measurement will avoid confusion and result in greater accuracy.

The final quantity will be entered in the Final Quantity Book and referred to field measurements in the Construction Book. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

520.5 Expansion Devices. Non-Modular- Field Documentation, Measurement. and Payment.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will make notes regarding: type of seal used, whether gland or compression, manufacturer's name, preparation of surface areas prior to installation, name of lubricant or sealant, and other Specifications requirements. Crew, equipment, weather conditions and temperatures will also be recorded.

Measurement and Payment.

Final Quantity Book: Final quantity for payment will be entered in the Final Quantity Book by the unit. Reference will be made to appropriate Diary entries that document inspection and acceptance. **All calculations and data entries must be signed, dated and checked; the checker must sign and date their entries.**

523.5 Pot Bearings - Field Documentation. Measurement. and Payment.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will inspect and note approval of : 1) when the bearings have been delivered to the site and properly stored 2) when the bearing area has been prepared; 3) when the holes are drilled and the anchor bolts grouted in place 3) note the manufactures name and verification of grout on the Department Approved product list 3) when the preformed pads, plates, and bearings are set; and 4) when the temperature adjustments have been made and the sole plates are welded to the girders. Any or all of these steps may be combined along with a final acceptance of the work.

Approved shop drawings, shop inspection reports and test results will be forwarded to the Resident by the Fabrication Engineer in advance of delivery of the bearing assemblies to the site.

Measurement and Payment.

Final Quantity Book: Final quantity for payment bid and measured by the unit for each assembly will be entered in the Final Quantity Book. References will be made to notes of inspection and acceptance of seating areas and test results for the grout. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

525.5 Granite Masonry - Field Documentation. Measurement. and Payment.

Field Documentation.

Project Diary, Inspector's Dairy/Daily Report: The Resident or Inspector will note inspection and acceptance of granite stones, anchors, mortar, and caulking material. He/she will also inspect and note the Contractor is preparing the areas prior to setting the stones.

Measurement and Payment.

Final Quantity Book: Final quantity for payment will be calculated from field measurements or plan dimensions recorded in the Construction Book. Final quantity will be entered in the Final Quantity Book, signed, dated, and referred to notes of inspection and acceptance in the Project Diary. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

526.5 Concrete Barrier - Field Documentation Measurement and Payment

Field Documentation.

Project Diary, Inspector's Diary/Daily Report: The Resident or Inspector will note when the type of barrier installed, the inspection and acceptance of forms and re-steel. Sometimes this item is pre-cast. In this situation, refer to the inspection reports written by the Inspector at the plant at the time the barriers were cast. When it is necessary to reset, a note of a spot check of the dimensions for plan conformity and will also inspect for location as shown in the traffic control plan or other contract documents.

Measurement and Payment.

Final Quantity Book: Final quantity for payment will be lump sum or by the meter.

If the Temporary Concrete Barrier is measured and paid by the linear foot, measure the total length acceptable and enter it directly in the Final Quantity Book. If the item is measured and paid Lump Sum, enter the "Lump Sum" in the Final Quantity Book.

Permanent Concrete Barrier Type II, IIIa, and IIIb will be measured for payment by Lump Sum complete in place and entered directly in the Final Quantity Book.

Permanent Transition Concrete Barrier will be measured by each barrier connecting bridge rail to guardrail complete in place and entered directly in the Inspectors Daily Report or the Final Quantity Book.

The final figure will be entered in the Final Quantity Book, signed, dated, and referenced to Diary entries for inspection and acceptance and to field measurements recorded in the Construction Book if the item is measured by the unit. **All calculations and data entries will be signed, date, and checked; the checker will sign and date their work.**

Division 600 – Miscellaneous Construction

603.5 Pipe Culverts and Storm Drains

604.5 Manholes and Catch Basins

605.5 Underdrain

Field Documentation

Drainage Book, Construction Book: The Resident or Inspector will keep drainage installation notes in the Drainage Book if the drainage is extensive, or in a Construction Book. If the drainage is a minor item in the contract. Section 901.3 - Field Books in Division 900, of this Manual describes in more detail the contents of these fieldbooks.

The Resident or Inspector should note the inspection of the material as it arrives on the project to insure that the material meets specifications, fits the application and is free of damage from delivery. The installation notes should include the inspection of line and location, grade, special connections, bedding & backfill material and compactive effort.

The Resident or Inspector will note the placement of any excavated material that is not used for backfilling. Excavated material should not be wasted unless there is no possible use for it on the project.

For sample project diary entries ref page 63 and for inspectors diary entries ref page 90 & 91.

Measurement and Payment

Excavation to install drainage is incidental to the item except for rock and excavation "below grade", defined in the Specifications. If a boulder or a concrete obstruction measuring two cubic meters or more is encountered in the excavation, that portion within the limits of the trench is paid as structural rock and the portion outside the limits is paid as common rock excavation. Portions within and outside the trench limits can be estimated in fractions, example " 1/2 boulder outside trench".

In a "full construction" area, if a portion of the boulder or concrete is above subgrade, that quantity will be paid as rock excavation and deducted from common excavation.

Underdrain special connections (elbows, wyes or tees) will be counted and 3 feet added per connection to the overall length of the run of pipe.

After acceptance of the catch basin or manhole, the height from floor to top of grate should be measured and recorded for final payment. Units up 2.5 meters [8 ft] will be 1 each. One fifth of a unit [one eighth of a unit] will be added for each additional 0.5 meters [1 ft] over 2.5 meters [8 ft] measured to the nearest 0.5 meters [1 ft]. Rebuild, alter and adjust items are measured as 1 each.

Section 206.5 in Division 200 of this Manual further describes structural excavation for drainage.

Final Quantity Book: Final quantity for payment will be by the linear measurement. The final figure will be entered in the Final Quantity Book, signed, dated, and referenced to Diary entries for inspection and acceptance and to field measurements recorded in the Construction Book if the item is measured by the unit. **All calculations and data entries will be signed, date, and checked; the checker will sign and date their work.**

606.5 Guard Rail - Field Documentation. Measurement. and Payment.

Field Documentation

Project Diary, Inspector's Diary/Daily Report, Guardrail Book: The Resident or Inspector will document the Contractor's progress on guard rail items. If guardrail work on the project is extensive and if several items are involved, for example: remove, modify, and reset, or adjust, or remove and reset, the Resident should set up a "Guardrail Book". Each run of guardrail to be worked on will be entered in this book primarily by location, i.e., station to station, left or right, and further identified by type of work to be done, whether remove, modify, and reset, or adjust, etc. As a run is completed and accepted, it will be so noted by the Inspector and dated.

All of the above documentation can be entered in the Construction Book if guardrail is not a major item in the contract.

Measurement and Payment

Final Quantity Book: Final quantity for payment will be entered in the Final Quantity Book, signed, dated, and referenced to source documentation in the Guardrail Book, or in the Construction Book for lesser quantities.

Final quantities will be field measured or figured from station to station. **All calculations and data entries must be signed, dated, and checked; the checker must sign their entries.**

609.5 Curbing- Field Documentation. Measurement. and Payment.

Field Documentation

Project Diary, Inspector's Diary/Daily Report, or Construction Book: The Resident or Inspector will note the Contractor's progress on these items; approximate station to station limits of work, crew, equipment will be recorded and notes of inspection and acceptance.

Notes of inspection will include, in the case of vertical curbing, the condition of the curbing when it arrives on the project to insure size and tolerance specification. Notes will also include the bedding and backfill material and line and grade.

Field measurements will be entered directly in the Final Quantity Book or in the Construction Book after the curb is complete, accepted and installed. If the curbing is extensive, the Resident should set up a "Curb Book" or at least dedicate a part of the Construction Book before the Contractor begins work. The location of each item of curb, i.e., "new", "reset", or "circular", and terminal, should be identified by sketches, station to station limits, left or right shall be noted.

Final Quantity Book: Final quantity for payment will be entered in the Final Quantity Book, signed, dated, and referenced to measurements.

For sample project diary entries ref page 64.

Measurement and Payment

No separate payment is made for excavation to install curb, whether new or reset. Excavation is incidental to the curb item or to roadway excavation. There is no payment to remove existing curb; only curb that is reset is measured for payment. Removal of existing curb that is not used is incidental to other items in the contract.

All calculations and data entries will be signed, dated, and checked; the checker must sign and date their work.

610.5 Stone Fill. Rip Rap, Blanket. and Stone Ditch Protection.

Field Documentation

Project Diary, Inspector's Diary/Daily Report, Construction Book: The Resident or Inspector will make notes documenting progress of work on these items. They will record source of material, whether rock from within the excavation limits on the project, pit tailings, or rock quarry.

Measurements, sketches, and computations will be recorded in the Construction Book or directly in the Final Quantity Book.

Final Quantity Book: Final quantity for payment will be entered in the Final Quantity Book, signed, dated, and referenced to measurements and calculations. Quantities will be determined from surface area measurements to limits authorized by the Resident and to depths shown on the plans.

If riprap or stone fill is placed under water or on rough, irregular ground as required by the Resident or called for on the plans, quantity for payment can be measured by delivery slip with no reduction in volume. Reference is made to Section 610.05 of the Specifications.

Measurement and Payment

If the source of material is rock excavation, there will be no deduction from borrow, even though rock excavation is designated for use in the embankment, i.e., even though the project is a "borrow" job. Specifications, Division 100, Section 104.3.13 allows the use of ledge for items designated under this Section without deduction from borrow.

There will be no payment for excavation beyond the face of riprap, stone ditch protection, and stone blanket; only the excavation from original ground to face of the finished slope is allowed, i.e., excavation is incidental to riprap where rock is actually placed. More detailed explanation is given in Section 610 of the Specifications.

All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.

615.5 Loam. 616.5 Sod. 618.5 Seed. 619.5 Mulch - Field Documentation. Measurement. and Payment.

These Sections describe the recordkeeping necessary to document and measure for payment loam, sod, seed, and mulch placed on the project.

Field Documentation.

Project Diary, Inspector's diary/Daily Report: The Resident or Inspector will keep notes describing the Contractor's loam, sod, seed, and mulch operations. They will record location of areas worked, personnel, equipment, and weather conditions. Depth of loam will be spot checked and recorded; loading of the hydroseeder with seed, lime, fertilizer, and mulch will also be documented.

Contract Specifications require that, at the Resident's directive, a second seeding be applied within 60 calendar days of the first seeding at the Contractor's expense if there is no acceptable growth of grass at the first seeding. The Resident must notify the Contractor before the end of the 60-day period for the Specifications requirements to remain valid. Reference is made to seed Specifications in the Contract Book for further clarification.

Measurement and Payment.

Final quantity for payment will be plan quantity or the quantity determined from measurements.

Plan Quantity. Specifications state that final payment for seed and mulch will be based on the quantities shown in the Schedule of Items if estimated areas agree within 15 percent of actual areas. A review and check of the Engineer's Estimate for reasonableness is an acceptable way to verify the quantity shown in the Schedule of Items. The plan quantity will be adjusted, upward or downward, if changes are made in the field.

Measurements. If the plan quantity is inaccurately figured or has no basis, i.e., is a "throw in" amount, quantities of seed and mulch will be determined from field measurements or from dimensions scaled off the plans.

The accuracy and frequency of measurements will depend on the project. On a rural overlay job, station-to-station limits and typical widths scaled off the plans or field measured are acceptable. On an urban job, areas will be divided into common shapes and field measured by length and width.

Loam and sod will be field measured. Field measurements and scaled measurements will be entered in the Construction Book, signed, and dated. Final pay quantity will be entered in the Final Quantity Book and labeled as such, signed and dated; references will be made to source documentation such as measurements and loading of the hydroseeder. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their entries.**

626.5 Foundations. Conduit, and Junction Boxes for Highway Signing, Lighting, and Signals - Field Documentation. Measurement. and Payment.

Field Documentation.

Project Diary, Inspector's Diary/Daily Report, Sign Book: The Resident or Inspector will keep notes regarding the Contractor's progress of work on the installation of foundations, poles, signs, lights, and traffic signals. The Resident or Inspector will document inspection and approval of forms, re-steel or steel wire mesh, anchor rods, and conduit in the foundation units.

The Resident or Inspector should keep a log of foundations installed, lengths of conduit buried, junction boxes sign locations, signal support poles and light pole foundations and documented in an Inspectors Diary or Construction book

If the project is primarily a signing or lighting job, the Resident should set up a "Sign Book" before the Contractor begins work. Signs will be identified in this book by location. The Resident or Inspector will note type of sign required and will record when the foundation is placed, when the poles, signs and lights are erected, and length of conduit and wiring installed. As noted above, inspection and acceptance of forms, re-steel, anchor rods, and conduits will be recorded; other pertinent information will be noted as required.

Measurement and Payment.

Final Quantity Book: Final quantity for foundations, junction boxes, conduit, and wiring will be entered under the appropriate items in the Final Quantity Book. Reference will be made to field counts or field measurements. The Sign Book can be eliminated if signing and lighting are not a major portion of the contract; measurements and documentation can be entered directly in the Final Quantity Book or in the Construction Book. **All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.**

629.5 Hand Labor 631.5 Equipment Rental Field Documentation. Measurement. and Payment.

Field Documentation.

Daily Report of Labor and Equipment Rental: The Resident will use this form to document hours for payment. Approval for hourly work, if not bid items, will be in writing by Work Order, and verbally by the Resident if bid items are involved. A detailed explanation of the work performed, inspected and accepted, and reference to the pertinent work order or "authorization by the Resident" should be noted in the Remarks section of the Report.

For sample project diary entries ref page 63, for final quantity book entries ref page 77, for inspectors diary entries ref page 90 & 91, and for a sample DREW from ref page 98

Measurement and Payment.

Whereas payment for hourly work often is extra and unforeseen and therefore authorized by work order, the Resident should refer to Division 100 of this Manual and the Specifications for explanation of price determination for labor and equipment.

Section 109 of this Manual further explains the circumstances under which a Work Order is required.

Specifications, Section 629, allow payment for overtime labor under the following circumstances:

- A. When the Resident requires the work to be done during the Contractor's normal overtime hours.
- B.. When the Resident directs the Contractor to do the work within a limited period of time and overtime is necessary to complete the work.
- C. When the work is of an emergency nature and overtime is required.

Final Quantity Book: Final quantities for payment will be entered under the appropriate hourly items as bid, and will be signed, dated and referred to Daily Reports of Labor and Equipment Rental.

All calculations and data entries must be signed, dated, and checked; the checker must sign and date their work.

Division 900 – Project Record and Closeout

This Division explains how the Resident is to prepare project records for close-out and final payment.

<u>Section</u>	<u>Title</u>
901	Preparation of Project Records
902	Review, Close-out, Final Payment

SECTION 901 - PREPARATION OF PROJECT RECORDS

901.1 General This Section describes the requirements for preparation of the project records by the Resident for final review. Field record-keeping and testing procedures for the individual pay items are explained in the appropriate sections of this Manual.

Project Records. Project records are grouped as follows:

<u>Section</u>	<u>Title</u>
901.2	Project Diary
901.3	Final Quantity Book
901.4	Construction Book
901.5	Drainage Book
901.6	Inspectors Diary
901.7	Final Quantity Computation Book
901.8	Testing File
901.9	Miscellaneous Records

901.2 Contents of a Project Diary

Every job must have a Project Diary, or, in the case of Field Manager, a Daily Diary or a combination Daily Diary and Inspector's Daily Report. The Project Diary is intended to give the reader a general accounting of the Contractor's and subcontractors' day by day activities such as: pay items worked and ,locations, source and disposition of excavation, borrow, gravel, and pavement grindings, All Directives given to the Contractor and non-routine matters must be recorded as well. Examples are: Traffic Accidents, the Contractor adherence to traffic maintenance and erosion control, disregarding contract Specifications, not staffing the job appropriately to complete work within required time limits, and other issues that could result in contractor claims. Matters dealing with town officials, utilities, developers, and other abutters should also be recorded. Information recorded in the Project Diary/Daily Diary should be factual and pertinent information; personal opinions and speculative remarks should not be included.

Examples of a project Diary template and typical boilerplate entries are located in Appendix A pgs 89 through 94.

901.3 Contents of a Final Quantity Book

Final Quantity Book/Item History to Date: The Final Quantity Book, or Item History to Date if the job is set up using Field Manager, is the mainspring of the project records. Every bid item originally in the contract and all work orders involving additional payment must be entered in this book; no job can be paid off without it.

Funding of a contract is sometimes divided into several funding sources, which usually result in pay items being grouped under different categories and PINs within the contract. The Final Quantity Book must be organized to reflect the different categories and pin numbers. PINs and categories will show on the first progress estimate, but if the Resident needs this information before the first estimate is issued, the Contracts Section will provide it.

A reference trail from the final pay quantity to the original documentation, whether it is notes of inspection and acceptance, measurements, or computations, must always be provided. It is suggested that the Resident and their inspectors enter original documentation and calculations to the extent feasible, directly in the Final Quantity Book

Urban full construction or reconstruction projects usually involve the town, sewer/water districts or other utilities. A formal agreement called a Municipal Agreement or a City- State Agreement drawn up between the parties will stipulate payment responsibilities and other contractual responsibilities. These agreements will frequently make the Town or the Utility District liable for a share of the project cost. The Resident should have a copy of these agreements; there may be several and they are available from the Project Manager. Items involved will normally show as a category in the progress estimate, but if not, they still need to be entered as a separate entity in the Final Quantity Book.

The Final Quantity Book/Item History to Date will have no more than one item per page. Item number, description, and estimated quantity will be entered at the top of the page. Final pay quantity will be entered at the bottom and so labeled. **All entries in the Final Quantity Book must be signed, dated, and checked; the checker must sign and date each entry as well. All final quantities in the Item History to Date must also be signed, dated, and checked, and the checker must sign and date the entries. Signatures in the Item History to Date may be signed manually or an electronic signature can be used.**

Examples of Final Book entries are located in Appendix A pgs 65 through 79.

901.4 Contents of a Construction Book

Construction Book: This book is a catch-all; whether the Resident uses Field Manager or the conventional method of keeping project records, i.e., field books, a “construction book” is handy to have and usually necessary. Complex field measurements, field data, or sketches that must be recorded before that work is buried and cannot be easily recorded in the Final Quantity Book/Item History to Date can be entered in the Construction Book.

Typically, measurements for riprap, loam, seed, mulch, undercuts, top of ledge elevations, boulders, gravel used for traffic maintenance, grade checks on concrete forms and drainage systems, and layout in general will be entered in the Construction Book.

One form of a Construction book is referred to as a Grade Check Book. On a large, full construction project a grade check book should be set up prior to the work being done. This book will provide the Inspector with a handy tool to use for checking subgrade, top of gravel (“fine-grading”), ditches and backslopes. A copy may be given to the Contractor’s grade foreman for them to use. The Contractor’s foreman is in effect performing a Quality Control activity and the Department’s Inspector is performing a Quality Assurance activity by checking, at random, the Contractor’s grading accuracy.

Examples of a Construction Book entries are located in Appendix a pgs 80 through 88.

Examples of a Grade Check Book entries are located in Appendix a pgs 81 and 83 .

901.5 Contents of a Drainage Book

Drainage Book: If a job has a large quantity of drainage, such as on a complex urban project, documentation of drainage installations should be entered in a separate book called a Drainage Book. This book should be organized before the work is done; each run of pipe and each catch basin or manhole would have its own page or pages.

As the work progresses, inspector’s notes and measurements would be entered under the appropriate run: length of pipe and catch basins installed, gravel used for traffic maintenance, undercutting and bedding material used, ledge removed, riprap at pipe inlets or outlets, or utilities encountered, could be part of the daily entries. Quantities for payment would then be summarized in this book and transferred into the Final Quantity Book/Item History to Date.

Examples of Drainage Book entries are located in Appendix a pgs 84, 86, 90 & 91.

901.6 Contents of an Inspectors Diary

Inspector's Diary/Inspector's Daily Report: If a job is staffed by more than one inspector, the Resident may want the inspectors to keep diaries. This diary would contain the same boilerplate information as the Project Diary but would have a more detailed accounting of the Contractor's activities and progress of work. The Inspector's observation notes and some measurements may also be recorded. Again, only pertinent and factual information should be included; no personal opinions or speculative statements should be included.

Examples of an Inspectors Diary entries are located in Appendix a pgs 89 through 94.

901.7 Contents of a Final Quantity Computations Book.

This book contains all computations that support pay quantities and that are done on 8 ½ by 11 sheets or other loose sheets. These computations may be done manually or may be computer generated. Whether the Resident uses the conventional paper method or the software program Field Manager, a Final Quantity Computations Book will be needed, as necessary. Dimensions, measurements, and computer data used in the computations must be referenced to source, whether it is plans or field measurements. **All calculations and data entries must be signed, dated, and checked; the checker must also sign and date all calculations and data entries.**

Computation sheets will be filed by pay item, beginning with the lowest numbered. Example: Item 201 - Clearing. A summary sheet will precede the computations for each pay item. Totals shown on each summary sheet will be transferred to the appropriate pay item in the Final Quantity Book. The pages of each item should be numbered consecutively. Computation sheets will be bound together in a red binder, titled in one inch lettering: Project Number, Project Identification Number (PIN), Town, and Final Quantity Computations Book.

Daily Reports of Hourly Work and Flagger Reports should be filed in the Final Quantity Computations Book, located as items 629-631, and item 652, respectively. Following the item computation sheets is a copy of all Extra Work Orders, and Resident's Work Orders. A list of plotting rolls and plans, and a list of field books is also required. Index tabs will be used to locate each pay item or list.

901.8 Content of the Testing File.

The Minimum Testing Requirements, also known as the "Minimums", specify the frequencies and types of tests to be taken of materials used on the project. The Minimums are determined by the Materials Section in Bangor, and are available at the following network: Network Neighborhood/DOTBGR/Shared/Minimums. General testing requirements will be found in each Section of this Manual. The Minimums may vary from these general testing requirements to meet the needs of each particular project. The Northern Area Acceptance Testing Supervisor issues the "Minimums" for all projects; he will e-mail the requirements to the Resident. Alternately, the "Minimums" are available at the above noted address.

Exhibit 20 is a sample set of Minimum Testing Requirements.

The Resident is to use the list of Minimum Testing Requirements as a guide to test job materials. The minimum number of any particular test should not be less than the listed requirement without justifiable reason. Changes are to be explained by memo filed with the item involved. The most frequently seen change is a decrease in the number of densities required. However, due to changes in material sources, borderline materials, or work being done in several small sections (mostly on urban projects), more tests than the minimum may be necessary. The Resident must use his discretion to determine when more tests are necessary. The Resident must also explain the outcome of failing materials, i.e., removed and replaced, or accepted on the basis of substantial conformance.

If a contract contains Acceptance Methods that allow pay adjustments for hot bituminous pavement and for concrete, the Contractor's QC test data and the Engineer's Q A test data will be filed together for each day such testing is performed under the pertinent item. Pay adjustment computations will also be filed with the test data. These calculations will be done by the Resident and checked by someone knowledgeable in the

calculation of pay adjustments.. The Contractor should be given the opportunity to review the adjustments before the Resident submits the project records to the Contracts Section for review.

The Testing File documents the quality of materials incorporated into the project. Reports and related data will be filed chronologically with the most recent on top and will be grouped and tabbed by pay item in the same order as shown on the list of Minimum Testing Requirements, a copy of which must be included in the front. The Testing File will be bound by a black acco-press binder and with the following information on white labels: Testing File, Project No., PIN, and Town. Index tabs will be used to separate and identify the items.

901.9 Miscellaneous Project Records

Project files consist of job records exclusive of final quantity computations, field books, and test data, turned in to the Contracts Section at the completion of the project. The following types of records should be grouped and submitted in manila envelopes: general correspondence, right-of-way records, utility records, submittals (shop drawings), permits, payrolls, payroll interviews, delivery slips, and cover slips. The envelopes should be labeled with the project number, town, and contents. Work orders, flagger reports, and daily work reports become part of the Final Quantity Computations Testing File. The preliminary engineering file, known also as "PE" file, the engineer's estimate and one copy of the bid book (Special Provisions) should also be turned in with the project records. Extra copies of the proposal book, delivery slips for hot mix asphalt, and progress estimates, vouchers, and estimate computations may be discarded before the project records are submitted for final review. The most recent progress estimate must be kept, as it will be used to prepare the Final Quantity Estimate during final review.

SECTION 902 – Review, Closeout and Final Payment

This Section describes the procedure the Resident is to follow when project records are submitted to the Project Review Unit of the Contracts Section for final review and close-out of the project.

902.1 General

The purpose of the final review is to assure that both the quality and quantity of materials and work performed by the Contractor are tested and documented according to Departmental policy and procedure.

After the job records have been assembled as described in Section 901, the Resident will contact the Project Review Unit and make an appointment to submit the records for final review. This should take place within 60 calendar days of physical completion of the project. Physical completion is described in Section 107.9, Division 100, of the Specifications.

902.2 Review

The Resident and someone in the Contracts Section, the "Reviewer", will go over the project records together to assure that the final quantities for payment are substantiated by field measurements and other original documentation as required. A project review checklist, copy following, is to be used as a guide. Also at this time, the Testing File will be reviewed to verify that materials have been tested according to the list of Minimum Testing Requirements and Departmental policy.

Pages 99 through 102 are sample final review checklists and page 103 is a sample on-site review checklist.

Work and materials that are not documented and tested in accordance with Departmental policy may require additional tests, measurements, or field documentation, or may be shown as , "non-participating" on the Final Quantity Estimate, that is, ineligible for Federal funds.

As part of the review, the Final Quantity Estimate will be made out and labeled as such used to make progress payments, the Resident should contact the Project Review Unit, prior to submitting records for review, so that a paper copy of the most recent progress estimate can be prepared. This estimate will then be used to make out the Final Quantity Estimate. Every project must have a paper copy of the Final Quantity Estimate as part of the final contract documents.

Quantities to be billed to Towns, Sewer & Water Districts, Utility Companies, Developers, and Abutters are to be summarized and forwarded to the Bureau of Finance & Administration. Municipal Agreements, discussed under section 901.3 are to be reviewed and billings done accordingly. The Reviewer and the Resident will prepare together, at the time of final review, the bills to be sent; the Reviewer will present these bills to the

Bureau of Finance and Administration.

It is sometimes the case, that it is necessary to go back to the job to do repair work or to make changes after the project has been completed and the Contractor has been released from further obligations. By FHW A agreement, work done after project completion that involves a change in design is participating. Work that consists of restoring to original condition as designed would be considered maintenance work and not eligible for Federal Funds.

It may be done by the original Contractor or a Contractor on an active project nearby, by Town forces, or Maintenance Division forces, depending upon costs and the availability of crews and equipment. Transfer of costs from the active project to the project involved, payments to the Town, and transfer of funds to the Maintenance Division will be done by the Contracts Section with the assistance of the Resident. A work order will be required to document costs and payment procedure.

In addition to the Final Quantity Estimate, the following final documents are also required:

Time Charge Report: This report shows the required contract completion date and actual completion date. The Resident will discuss time overruns with their supervisor and document resolution of such overrun by a memo to the Project Review Unit, whether it is a time extension or assessment of liquidated damages. A meeting with the Contractor may be required in the process. Exhibit 25 is a sample Time Charge Report.

Right-of-Way Encroachment Memo: This memo lists kind and location of encroachments within the right-of-way, only if new right-of-way is taken. Pre-existing encroachments need not be reported. Page 97 is a sample Right-of-Way Encroachment memo.

Contractor Evaluation: This form is an evaluation of the Contractor's performance during construction of the project. It must be completed and signed by the Resident and co-signed by the Contractor's Superintendent. Page 105 is a sample Contractor Evaluation packet.

Explanation of Overruns and Underruns: Written explanations of overruns and underruns are no longer required when final records are submitted for review. Significant quantity overruns and underruns will be discussed at the final team meeting. The final team meeting will be coordinated by the Resident With the Project Manager. Minutes of the meeting will be written by the Resident and distributed to team members and functional managers.

The Resident should complete the above three documents prior to final review; these documents are available from the Contracts Section in Augusta. The Final Quantity Estimate will be made out during the final review process.

Two brief reports, in the form of memos to the project file and usually one page each in length, will be written by the Reviewer. One memo addresses final quantities and the other addresses testing of materials. The "Final Quantities" memo states that project records have been reviewed and properly substantiate quantities of work incorporated into the job, with exceptions if any. The "Testing Memo" states that the testing records have been reviewed and properly substantiate the quality of materials incorporated into the project, and again, exceptions are noted, if any. Secondary documentation and explanations are made part of the memos when there are exceptions.

It may be the situation that, at the completion of final review, there remains contractor issues that are unresolved, usually: potential liquidated damages, disagreement over pay factors for hot-mix asphalt or concrete, or contractor claims. The Resident likely will be called on to help settle these items by meeting in Augusta with their Supervisors and with the Contractor; this will be done before the Project Review Unit makes final payment and the project is closed out.

902.3 Close-Out and Final Payment.

A project cannot be closed out until all outstanding issues are resolved on the project and final payment is made.

Following the final review, the Contracts Section will send a copy of final quantities to the Contractor with a cover letter stating that the final quantities are included and what final documents are to be submitted and issues remaining to be settled before final payment can be made. Contractor's final documents are:

1. Certificate of Materials, Section 700 - Specifications.
2. "Buy America" Statement, Appendix A, Section 3, Buy America, Div 100, Specifications.
3. Letter "All Bills Paid", Subs 1 0 1.2, Definitions-Closeout Documentation, Div-100, Specifications.

4. FHWA Form "PR-47" on projects with full Federal oversight over \$1 million in estimated cost - Division 100, Section 101.2 - Closeout Documentation of Division 100, Specifications, discusses the above listed documents. Contractor Evaluation Forms, and PR-47 Forms are available from the Contracts Section.

Contractors will not generally submit the "All Bills Paid" letter until they have seen the Final Quantity Estimate and have settled all items of contention with the Department, liquidated damages being the most frequent one.

A portion of the monies withheld from the Contractor (the "retent") may be paid at the time of final review or prior to it, depending on the status of the job. If there are no liquidated damages, no claims or disagreements with quantities, or no remaining work to be done in the field (such as clean-up), most of the retent may be paid. A fixed amount will be held pending the receipt of final documents.

After the Contractor submits the final documents to the Project Review Unit and all issues have been settled, final payment is made. This payment includes final adjustments, and also the remainder of the retent. When the "Final Estimate" is paid, the project records are filed with the Program. The Bureau of Finance and Administration will continue the close-out process by issuing the last check to the Contractor, and working with the FHWA for reimbursement for the Federal share of the project.

APPENDIX A

SAMPLE DOCUMENTATION

DATE	DAY	WEATHER
MDOT:	PERSONEL	
CONTRACTOR		
PERSONEL		
EQUIPMENT		
WORKING HOURS		
SUB CONTRACTOR		
PERSONEL		
EQUIPMENT		
WORKING HOURS		
VISITORS		
PROJECT ACTIVITIES:		
ITEM NUMBER, LOCATION & LIABLE CONTR/SUB		
SOURCE AND DISPOSITION OF ANY EXCAVATION		
SOURCE AND DISPOSITION OF GRAVEL AND BORROW		
NON-ROUTINE ACTIVITIES		
A: CONTRACTORS' NON ADHERANCE TO CONTRACT SPEC'S: MUTCD'S & SEWPC		
B: MDOT DIRECTIVES GIVEN TO CONTRACTOR IE: C/O RELOCATIONS / CHANGES IN DESIGN UNDERCUTTING & REWORK.		
C: CONTRACTOR IS INADEQUETLY STAFFING THE JOB FOR THE TYPE OF WORK		
D: ANYTHING RELATED TO POTENTIAL CONTRACTOR CLAIMS		
E: ANY DISCUSSIONS WITH TOWN OFFICIALS. UTILITIES, DEVELOPERS AND ABUTTERS		
G: TRAFFIC ACCIDENTS & OTHER HAZARDS		
ENTERED BY : NAME & DATE		

6/12/2002	FRIDAY		SUNNY 80'S
MDOT:	BILL BITTERMAN, RESIDENT		
	BILLY BOB BENNETT, INSPECTOR		
M&H:	6:00AM TO 5:00 PM		
	1 SUPT	1 COMPRESSOR	
	5 WORKERS	2 TRUCKS	
	2 LARGE EXC.	1 5 TON VIB ROLLER	
	1 APE	1 CHAMPTON GRADER	
	1 D6 DOZER		
HASTINGS	TREE REMOVAL SERVICES		
ITEMS 652.361 AND 656.75			
MTCO AND SEWPC INSPECTED AND ACCEPTED FOR THE WEEK			
ITEM 201.23 SINGLE TREE			
HASTINGS CUT AND REMOVED SINGLE TREE AT THE THE CORNER OF PINE STREET AND RT 4			
ITEM 603.159	12" OPT III CULV PIPE		
INSTALLED 12" OPT I CULV PIPE AT STA 12+56 RT			
ITEM 604.097	6' B1-C CATCH BASIN		
INSTALLED AT STA 12+56 RT			
ITEM 631.2	STUMP CHIPPER		
HASTINGS USED STUMP CHIPPER TO GRIND 2 STUMPS			
M&H MULCHED ALL DISTURBED AREAS			
COMPLAINT FROM BILL SIMPSON, PROJ SUPT ABOUT DELAYS FROM UTILITIES NOT SHOWN ON PLANS AS WELL AS SLOW PRODUCTION. HE THEY WILL KEEP RECORDS FOR POSSIBLE CLAIM. HE HAS ALSO REQUESTED INFORMATION ON ALTERNATE WORK AT THE OTHER END OF THE PROJECT STA 42+50 TO 45+75			
ENTERED BY : BILL BITTERMAN	6-12-02		

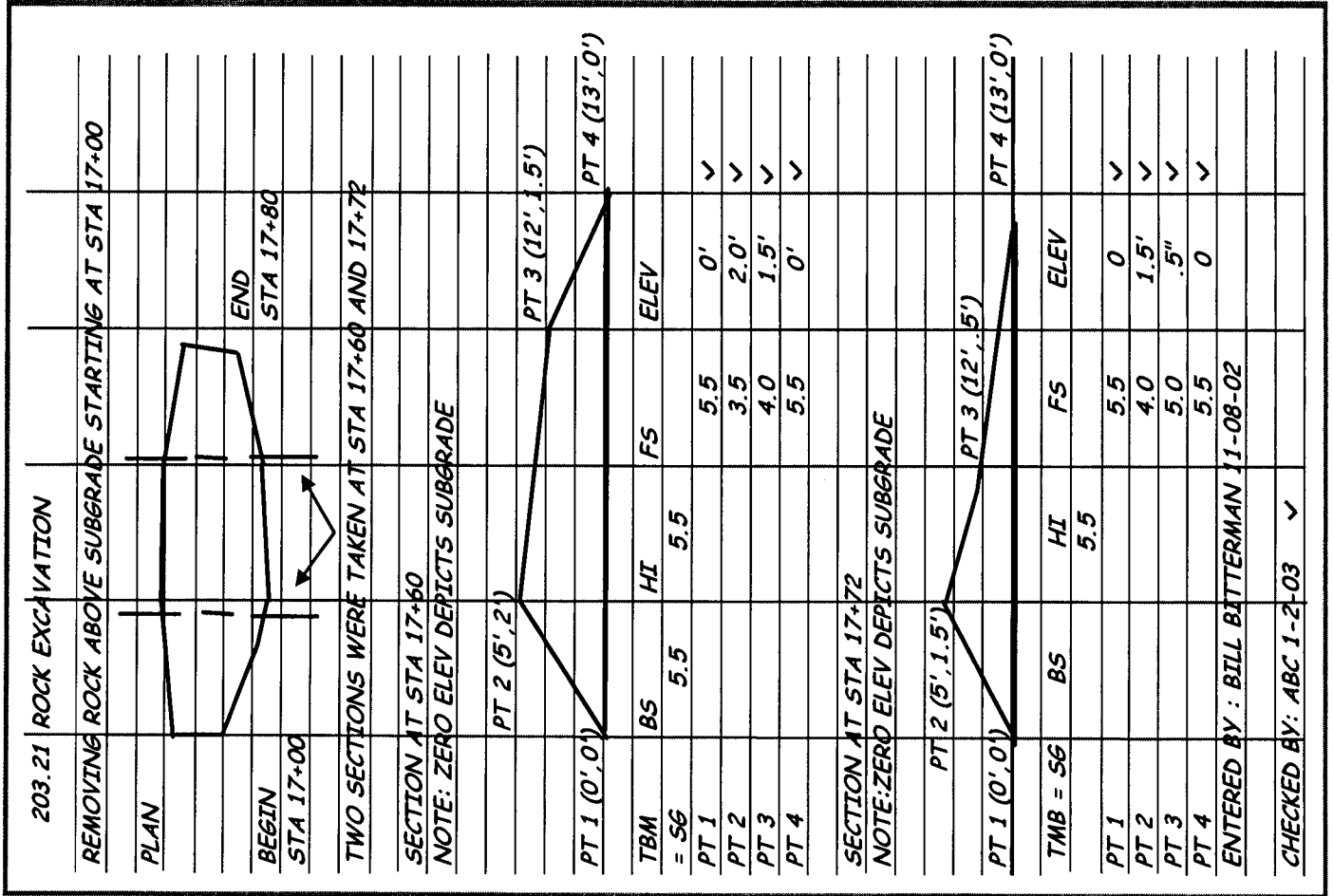
6/16/02	MONDAY		FAIR 60'S
MDOT:	BILL BITTHERMAN, RESIDENT		
	BILLY BOB BENNETT, INSPECTOR		
M&H:	6:00AM TO 5:00 PM		
	1 SUPT	1 COMPRESSOR	
	5 WORKERS	2 TRUCKS	
	2 LARGE EXC.	1 5 TON VIB ROLLER	
	1 APE	1 CHAMPION GRADER	
	ITEM 304.10, STA 3+00 TO 4+25		
	AFTER PLACING/COMPACTING LOWER LAYER OF ASC GRAVEL, THE SUBGRADE MATERIAL BEGAN TO PUMPING INTO THE LOWER ASC GRAVEL LIFT. THE RESIDENT DIRECTED THE CONTRACTOR TO EXCAVATE AND REMOVE THE CONTAMINATED GRAVEL. ROADWAY STABILIZATION GEOTEXTILE WAS THEN PLACED ON THE SUB-GRADE SURFACE BEFORE PLACING ASC GRAVEL. THIS WORK WILL BE PAID UNDER ITEM 203.20 COMMON EXC AND 304.10 ASC-GRAVEL. REF TO BOOK 4 PAGES 5 THROUGH 7 FOR FIELD MEASUREMENTS ROADWAY STABILIZATION GEOTEXTILE WILL BE PAID PER RESIDENTS WORK ORDER #1 (AMOCO 2006 INSTALLED)		
	THERE WAS AN ACCIDENT ON THE PROJECT TODAY AT STA 2+25 AT 10:00 AM +/- VEHICLE NO 1 (FORD EXPLORER PLATE NO 4356 JJ) REAR-ENDED VEHICLE NO 2 (CHEVY S-10 PLATE NO 763784 I) WHICH WAS STOPPED FOR FLAGGER ED KNOWLES WITHIN THE WORK ZONE. THE ACCIDENT WAS INVESTIGATED BY JOEL RAMICH OF THE FARMINGTON POLICE DEPT. ALL SIGNS WERE UP AND TRAFFIC CONTROL DEVICES WERE SATISFACTORY. REFER TO CORRESPONDENCE FILE FOR A COPY OF THE POLICE/ACCIDENT REPORT		
	COMPLETED ACCIDENT REPORT AND FORWARDED TO THE MDOT LEGAL DEPT.		
	ENTERED BY : BILL BITTHERMAN 06-16-02		

6/17/02	MONDAY		FAIR 70'S
MDOT:	BILL BITTHERMAN, RESIDENT		
	BILLY BOB BENNETT, INSPECTOR		
M&H:	6:00AM TO 6:00 PM		
	1 SUPT	1 COMPRESSOR	
	5 WORKERS	2 TRUCKS	
	2 LARGE EXC.	1 5 TON VIB ROLLER	
	SUB: PIKE IND, 4 ROLLERS, 1 PAVER, 12 TRUCKS, 1 SERVICE TRUCK, 1 WATER TRUCK & 1 BOBCAT.		
	PERSONNEL: 1 SUPT, 1 FOREMAN, 7 SKILLED, 12 UNSKILLED, 2 LABORERS & 2 QC/QA WORKERS		
	ITEM 304.104		
	FINEGRADE COMPLETE AND ACCEPTED STA 22+00 TO 35+25		
	ITEM 403.207		
	PAVING OPERATIONS BEGAN AT STA 22+00 TO 35+25		
	CALL FROM BILL COBURN-FABRICATION INSPECTOR RE: CONCRETE CURBING. BILL HAD SOME CONCERNS ABOUT THE PERMABILITY. HE WILL VISIT GAGNE THEIR VEAZIE TOMORROW AND WILL E-MAIL ME THE RESULTS OF THE TEST IF THERE IS A PROBLEM. REFER TO CORRES. FILE FOR RECORD.		
	ITEM 211.20		
	STA 2+00 TO 5+00, EXCESS MATERIALS FROM INSLOPE WORK REMOVED AND TAKEN TO APPROVED WASTE AREA (SMITH PIT)		
	ITEM 203.20		
	STA 2+00 TO 12+00, PIKES RECLAIMER ON PROJECT, STA 2+00 TO STA 5+00 TO REMOVE PVMT IN FULL EXCAVATION AREA, LOADER PLACING MAT'L IN TRUCKS TO BE STOCKPILED ON SITE AND PLACED AS ASG AT A LATER DATE. TO BE PAID AS COMMON EXC AND ASG. RECLAIMED STA 5+00 TO 12+00, GRADED AND COMPACTED, TO BE PAID AS 307.		
	DENNY DOYLE, MDOT	ON SITE TO TEST 307 COMPACTION	
	ENTERED BY : BILL BITTHERMAN 6-17-02		

[illegible][illegible]

7/24/1900 STRUCTURAL EARTH EXC-MAJOR STRUCTURES					REMOVAL
BS	HI	FS	ELEV	DEPTH BELOW	FT& ELEV 8.5'
TMB #3	3.8'	19.3'			
EL = 15.5'					
1		12.0	7.3	1.2'	
2		12.3	7.0	1.5'	
3		12.1	7.2	1.3'	
4		12.5	6.8	1.9'	
AVERAGE DEPTH OF UNDERCUT BELOW ELEV 8.5' =					1.5'
ITEM 206.082 STRUCT EARTH EXC-MAJOR STRUCT					
VOLUME = .5(12+14) X 4' X 1.5' = 78 CF/27 = 2.89 CY					
ITEM 203.25 GRAVEL BORROW					
VOLUME = 2.89 X 1.15 (SWELL) = 3.32 CY					
ITEM 206.092 STRUCT ROCK EXC-MAJOR STRUCT					
TOP OF LEDGE ELEVATIONS					
BS	HI	FS	ELEV		
3	3.8	19.3'	10.0	9.3'	
4			10.2	9.1'	
5			9.2	10.1'	
6			8.8	10.5	
7			8.4	10.9'	
8			8.2	11.1'	
TOP OF LEDGE WEIGHTED AVERAGE ELEVATION					
= (9.3 + 9.1 + 2(10.1+10.5) + 10.9 + 11.1)/8 = 10.2'					
BOTTOM OF LEDGE ELEVATIONS					
BS	HI	FS	ELEV		
3	3.8	19.3'	12.3	7.0	
4			12.2	7.1'	
5			12.0	7.3'	
6			12.1	7.2'	
7			12.2	7.1	
8			12.3	7.0	
BOTTOM OF LEDGE WEIGHTED AVERAGE ELEVATION					
= (7.0 + 7.1 + 2(7.3+7.2) + 7.1 + 7.0)/8 = 7.16					

5					AREA INCL/D
SOUTH ABUT FT&					
7	4'	8	6		
20'					LEDGE REM
5					'20
3					
4					
12'	V1				
AVG DEPTH	14'				
1					
4'	2				
ITEM 206.092					
VOLUME OF LEDGE ABOVE PLAN ELEV OF 8.5					
VOLUME = (10.2-8.5) X 21.5 X 5.5' (18" PAY LIMIT) = 201.0 CF					
VOLUME = 201.0 / 27 = 7.44 CY ✓					
ITEM 000.00, STRUCT ROCK BELOW PLAN ELEV TO BE PAID					
1.5 TIME 206.092					
VOLUME OF LEDGE BELOW PLAN ELEV OF 8.5'					
VOLUME = (8.5-7.15)' X 21.5' X 5.5' = 159.64 CF / 27 = 5.9 CY ✓					
ITEM 502.22 CONCRETE UNDERWATER					
REF DELIVERY SLIP NO BRI-9046					
QTY PLACED ON LEDGE TO PLAN ELEV = 6.5 CY ✓					
MEASURED/CALCULATED BY: BILL BITTERMAN 8-30-02					
CHECKED BY: ABC 1-2-03 ✓					



6

AREA OF SECTION =									
$.5(X_1(Y_4 - Y_2) + X_2(Y_1 - Y_3) + X_3(Y_2 - Y_4) + X_4(Y_3 - Y_1))$									
AREA OF SECTION AT 17 + 60									
POINT	X	Y	DIFFERENCE OF Y'S		DOUBLE AREA				
1	0	0	0-2=-2		+		-		
2	+5	+2	0-1.5=-1.5				0 ✓		
3	12	+1.5	2-0=2		24		7.5 ✓		
4	+13	0	1.5-0=1.5		19.5		✓		
1	0	0	0				0		
					43.5		✓		-7.5 ✓
					TOTAL = 43.5-7.5=36				✓
					AREA = 36 X .5 = 18 SF				✓
AREA OF SECTION AT 17+ 80									
POINT	X	Y	DIFFERENCE OF Y'S		DOUBLE AREA				
1	0	0	0-1.5=-1.5		+		-		
2	5	1.5	0-.5=-.5				0 ✓		
3	12	0.5	1.5-0=1.5		18		2.5 ✓		
4	13	0	.5-0=.5		7.5		✓		
1	0	0	0				0		
					25.5		✓		2.5 ✓
					TOTAL = 25.5-2.5= 23				✓
					AREA= 23 X .5 = 11.5 SF				✓
VOLUME OF ROCK REMOVED									
	AVERAGE								
STA	AREA	LENGTH	VOLUME						
	SF	FT	CF						
17+50	0								
		9	90		✓				
17+60	18								
		14.75	177		✓				
17+72	11.5								
		5.75	46		✓				
17+80	0								
	TOTAL VOLUME =		313/27 = 11.59 CY		✓				
ITEM 203.21 = 11.59 CY, ITEM 203.20 DEDUCT 11.59 CY ✓									



11

DATE	DAY	WEATHER
PROJECT ACTIVITIES:		
ITEM NUMBER, LOCATION & LIABLE CONTR/SUB		
SOURCE AND DISPOSITION OF ANY EXCAVATION		
SOURCE AND DISPOSITION OF GRAVEL AND BORROW		
NON-ROUTINE ACTIVITIES		
A: CONTRACTORS' NON ADHERANCE TO CONTRACT SPEC'S: MTD'S & SEWPC		
B: NOT DIRECTIVES GIVEN TO CONTRACTOR IE: RELOCATIONS, CHANGES IN ALIGNMENT UNDERCUT & REWORK		
C: CONTRACTOR IS INADEQUETLY STAFFING THE JOB FOR THE TYPE OF WORK		
D: ANYTHING RELATED TO POTENTIAL CONTRACTOR CLAIMS		
E: ANY DISCUSSIONS WITH TOWN OFFICIALS. UTILITIES, DEVELOPERS AND ABUTTERS		
F: TRAFFIC ACCIDENTS & OTHER HAZARDS		
ENTERED BY : NAME & DATE		

7/16/2002	SUNNY 70'S	1
ITEM 206.082		
COMPLETED EXCAVATION AT THE NORTH ABUTMENT SECTION, UPSTREAM OF CENTERLINE, DEWATERED AREA, CLEANED OFF LEDGE, AND PLACE 12.2 CY OF CONCRETE		
ITEM 502.26		
PLACED 10.82 CY OF CONCRETE FILL, 1.25 CY OF CONCRETE WAS SPILLED BEYOND THE FORMS AND WILL NOT BE PAID FOR. THE REMAINING CONCRETE WAS PLACED IN THIS SECTION TO THE ELEV OF THE BOTTOM THE FOOTING SHOWN ON THE PLANS. SECTION CURED WITH WATER AND CONT'D WETTED		
BILL SIMPSON, OES CONSULTANT ON -SITE TO REVIEW SEWPC DEVICES AND 3 ISSUES WERE BROUGHT TO MY ATTENTION, AND WERE DIRECTED IMMEDIATELY TO JEFF SIMPSON, WAS SUPER. AND WERE ALL ISSUES WERE RESOLVED.		
ITEM 206.082		
ALL EXCAVATED MATERIAL WAS DETERMINED TO BE UNUSABLE AND WAS TAKEN TO THE SMITH WASTE AREA		
ITEM 652.36 AND 656.75		
ALL MTCD'S AND SEWPC DEVICES ARE INPLACE AND IN GOOD WORKING CONDITION AT THE END OF THE DAY		
ENTERED BY: BILL BITTERMAN 7-16-02		

[illegible]

APPENDIX B

EXAMPLE MEMO'S AND FORMS

Maine Department of Transportation - Contracts Division

Time Charge Report

Project No. 9999

Town/City augusta Calculated By: B. Bitterman

Contractor: Contractor Checked By: J.Keamy

Contract Time Charges

Calendar Day Basis		Completion Date Basis	
Time Charge Started	<u>6/5/2004</u>	Required Completion Date	<u>10/27/2004</u>
Time Charge Suspended	<u> </u>	Actual Completion Date	<u>11/16/2004</u>
Time Charge Resumed	<u> </u>	Days Beyond Completion Date	<u>18 days</u>
Time Charge Terminated	<u>6/20/2004</u>	Days Added by WOs	<u>12 days</u>
Days Beyond	<u>0</u>	Days subjected to Liquidated Damages	<u>6 days</u>
Days added by W.O.s	<u> </u>		
Days subjected to Liquidated Damages	<u>0</u>		

EWO #	DAYS	EWO #	DAYS	EWO #	DAYS
<u>3</u>	<u>1</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>5</u>	<u>3</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>6</u>	<u>2</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Remarks:

***** DO NOT WRITE BELOW THIS LINE ***** TO BE COMPLETED BY AUGUSTA OFFICE *****

7) Time Extensions (g+h)		Days
g. D.O.T. Approval	Date:	Days
h. Other explain)	Date:	Days
8) Underrun		Days
9) Overrun		Days
10) Liquidated Damages	\$ per day = \$	
Use separate report for each type of time charge		

Signed:



JOHN ELIAS BALDACCIO

GOVERNOR

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

DAVID A. COLE

COMMISSIONER

Example No 1: Memo free of Encroachments

Project 009999.00 - Augusta

ENGINEERS STATEMENT OF RIGHT OF WAY ENCROACHMENT

The above mentioned project was inspected on February 9, 2005 and appears to be free of all Right of Way Encroachments.

Bill Bitterman

Bill Bitterman
Resident Engineer

Example No 2: Memo with Encroachments

Project 009999.00 - Augusta

ENGINEERS STATEMENT OF RIGHT OF WAY ENCROACHMENT

The above mentioned project was inspected on February 9, 2005 and appears to be free of all Right of Way Encroachments with the following exceptions:

1. Sta. 18+576 LT. Easy Self Storage sign on post.
2. Sta. 22+320 LT. Granite Mailbox post.

Bill Bitterman

Bill Bitterman
Resident Engineer



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THE MAINE DEPARTMENT OF TRANSPORTATION IS AN AFFIRMATIVE ACTION / EQUAL OPPORTUNITY EMPLOYER

Maine Department of Transportation - Contracts Division Waste Area Permit

Project No: _____

Town: _____

Upon receipt of written permission from _____
(Property Owner)

_____ is authorized to place waste material from this project at
(Contractor)

_____, in accordance with Sections 104.3.2 & 203.06 & 211.08,
(Description of Waste Area)

State of Maine, Department of Transportation, Standard Specifications Highways and Bridges,
Revisions of December 2002.

If this waste area is located within a wooded area, a screen of trees (min. width of 30m (100 ft) shall be maintained between the near edge of the waste area and the Right of Way or Construction Limit Line. If the width of the entrance to the waste area in a wooded area exceeds 5m (16ft), this entrance shall be replanted with trees compatible with the adjacent area. These plantings shall extend for a length of 30m (100ft) along the entrance road, or as otherwise directed by the Engineer.

All waste areas and entrances to the waste area shall be uniformly graded to drain, loamed or covered with other earthy material that will support growth of grass, seeded and hay mulched.

All trees which are damaged, uprooted or otherwise moved as a result of the waste material, and trees which have had waste material placed around them to the extent that they will die, shall be cut and removed.

Grading, Loaming, Seeding and Hay Mulching shall not be paid directly, but shall be incidental to other items in the contract.

The contractor is responsible for relocating and disposing of waste, in accordance with the Department of Environmental Protection Regulations, Chapter 404 (Storage and Disposal of Inert Fill).

Approval: _____
Project Resident

Agreed: _____
Contractor's Representative

*original copy to Contractor and additional copy for Resident's file.

MAINE DEPARTMENT OF TRANSPORTATION DAILY REPORT OF EQUIPMENT RENTAL

TOWN Augusta
PROJECT NUMBER: 9999
CONTRACTOR M&H

REPORT No. 12
AUTHORIZATION Residents Directive
DATE Thursday, August 21, 2004

LABOR

ITEM NO.	CLASS	RATE	TIME	TOTAL
				0
629.05	Hand Labor	\$35	6	210
				0
				0
				0
				0
				0
TOTAL				210

EQUIPMENT RENTAL

ITEM NO.	TYPE	RATE	TIME	TOTAL
				0
631.12	APE	\$100	6	600
631.15	Earth Roller (Inc. Op)	\$75	2	150
631.172	Truck Large, (Inc. Op)	\$55	6	330
				0
				0
				0
TOTAL				1080

MATERIAL

QUANTITY	DESCRIPTION	RATE	TOTAL
			0
			0
			0
			0
			0
			0
			0
TOTAL			0

SUMMARY	
TOTAL LABOR	\$210.00
TOTAL EQUIPMENT	\$1,080.00
TOTAL MATERIAL	\$0.00
TOTAL THIS REPORT	\$1,290.00
PREVIOUS REPORT	
TOTAL DATE	\$2,580.00

APPROVED: _____
RESIDENT

APPROVED: _____
CONTRACTOR REPRESENTATIVE

DESCRIPTION OF WORK:

Worked performed as directed at Sta 5+40 to 5+70 RT at the entrance to Bittermans Gas-n-Go. The Entrance was re-graded to insure drainage from the parking lot to the new Catch Basin at Sta 5+28 RT.

RESIDENT: _____
 DATE: _____
 REVIEWED BY: _____

PROJ. NO. _____
 TOWN/BRIDGE: _____

CLOSEOUT REVIEW GUIDELINES FOR OVERLAY PROJECTS

LABOR COMPLIANCE

Verify that employees are paid at wages not less than those contained in applicable wage decision	
Verify receipt of hourly breakdown for fringe benefits from Contractor	
Review documented employee interviews by appropriate MDOT personnel - Notify supervisor if missing	
Reviewer check of certified payrolls for accuracy	
Has Wage Rate Compliance Officer been notified of any problems?	

PROJECT DIARY

Daily entries showing working hrs, crew, equipment, weather, contractor and state personnel	
Time charge report	
MTCD and maint of Erosion Control items, weekly notes:	
Description of work done by item	
Other entries relating to contacts, claims and other potential problems	

FINAL QUANTITY BOOK

Book set up same as progress estimates	
Extra work & agreed unit prices documented, and referenced to Proj Diary	
Plan quantity per Resident Work Order & references proper documentation (<i>check engineers est</i>)	
Force Account Blue Book rates (maximum), receipted bills of mat'l + 15%, specialty 15%	
Quantities checked, signed, and referenced to construction book entries	
Billings & quantites: DOT to Municipality, DOT Maintenance or utility company	
QC/QA incentive/disincentive calculated	

GENERAL DOCUMENTATION REQUIREMENTS

Unit price Item, field measurements, sta to sta, limits, signed, checked	
LS Item ref to record of work done, inspec & accept documented in Pro diary, Final Quantity Book	
Force Account Items, doc by Daily Reports of Extra Work, receipted bills for specialty work and mat'l	
Participating	
Approval by Design and/or Supervisor if required	
Copy to FHWA on projects with Federal Oversight	
Copy to Finals Folder for scanning	

PAVEMENT ITEMS

Delivery slips, Cover slips totals signed, dated and entered in Final Quantity Book	
Tack coat delivery invoices, referenced to Certification of Analysis	
Daily reports of Extra Work	
Flaggers certified	
QC/QA test file	
Asphalt esclator for recycling if 108 Special Provision	

DRAINAGE

Drainage diary & installaion notes and layout notes, sta to sta & offsets documented	
Ledge removal quantity measured	

MISCELLANEOUS ITEMS

Have appropriate DBE letters and reports been completed	
Waste area Authorizations	
Contractor E-vals	
ROW Encroachment letter	
QC/QA for any fill and base material	
Hourly equipment rental items entered on DREWS	
Third party billing	

Notes:

PROJ. NO. _____

RESIDENT: _____

CLOSEOUT REVIEW GUIDELINES FOR FULL CONSTRUCTION PROJECTS

LABOR COMPLIANCE

Verify that employees are paid at wages not less than those contained in applicable wage decision	
Verify receipt of hourly breakdown for fringe benefits from Contractor	
Review documented employee interviews by appropriate MDOT - Notify supervisor if missing	
Reviewer check of certified payrolls for accuracy	
Has Wage Rate Compliance Officer been notified of any problems?	

PROJECT DIARY

Daily entries showing working hrs, crew, equipment, weather, contractor and state personnel	
Time charge report	
MTCD and maint of Erosion Control items, weekly notes:	
Description of work done by item	
Other entries relating to contacts, claims and other potential problems	

FINAL QUANTITY BOOK

Book set up same as progress estimates	
Extra work entered, agreed unit prices and ref to Proj Diary or written documentation	
Plan quantity per RWO references documentation (<i>check engineers est</i>)	
Force Account Blue Book rates, receipted bill mat'l + 15%	
Quantities checked, signed, and references construction books	
Billings quantites: DOT to City, maintenance or utilities	
QC/QA incentive/disincentive calculated	
Copy to Finals Folder for scanning	

GENERAL DOCUMENTATION REQUIREMENTS

Unit price Item, field measurements, sta to sta, limits, signed, checked	
LS Item ref to record of work done, inspec & accept documented in Pro diary, Final Quantity Book	
Force Account Items, doc by Daily Reports of Extra Work, receipted bills for specialty work and mat'l	
Contract Modifications (Change Orders - Resident Work Orders) - signed, Part & non Part	
Approval by Design and/or Supervisor if required	
Copy to FHWA on projects with Federal Oversight	

EXCAVATION AND BORROW

Source and Final placement noted in Project Diary (Pit author and waste areas)	
Checks on-subgrade, finegrade, ditch and backslopes	
Field changes documented by measurements	

AGGREGATE BASE AND SUBBASE

Finegrade checks, field measurements of drives and other changes	
QC/QA gradation and compaction	

DRAINAGE

Drainage diary notes and layout notes, sta to sta & offsets	
Ledge removal measured	

PAVEMENT ITEMS

Delivery, Cover and Tack slips totals signed, dated and entered in FQB (certificate of analysis)	
QC/QA test file	

MISCELLANEOUS

Flaggers certified	
Waste area Authorizations	
Contractor E-vals	
ROW Encroachment letter	
Hourly equipment rental items entered on DREWS & signed	
Third party billing	

REVIEWERS' NAME: _____ DATE: _____

RESIDENT: _____
DATE: _____



PROJ. NO. _____
TOWN _____

CLOSEOUT REVIEW GUIDELINES FOR BRIDGE PROJECTS

LABOR COMPLIANCE

Verify that employees are paid at wages not less than those contained in applicable wage decision	<input type="checkbox"/>
Verify receipt of hourly breakdown for fringe benefits from Contractor	<input type="checkbox"/>
Review documented employee interviews by appropriate MDOT - Notify supervisor if missing	<input type="checkbox"/>
Reviewer check of certified payrolls for accuracy	<input type="checkbox"/>
Has Wage Rate Compliance Officer been notified of any problems?	<input type="checkbox"/>

PROJECT DIARY

Daily entries showing working hrs, crew, equipment, weather, contractor and state personnel	<input type="checkbox"/>
Time charge report and ROW encroachment letter	<input type="checkbox"/>
MTCD and maint of Erosion Control items, weekly notes:	<input type="checkbox"/>
Description of work done by item	<input type="checkbox"/>
Other entries relating to contacts, claims and other potential problems	<input type="checkbox"/>

FINAL QUANTITY BOOK

Book set up same as progress estimates	<input type="checkbox"/>
Extra work entered, agreed unit prices and ref to Proj Diary or written documentation	<input type="checkbox"/>
Plan quantity per RWO references documentation (<i>check with Engineers est.</i>)	<input type="checkbox"/>
Force Account Blue Book rates, receipted bill mat'l + 15%, specialty 15%	<input type="checkbox"/>
Quantities checked, signed, and references construction books	<input type="checkbox"/>
Billings quantities: DOT to City, maintenance or utilities	<input type="checkbox"/>
QC/QA incentive/disincentive calculated	<input type="checkbox"/>

GENERAL DOCUMENTATION REQUIREMENTS

Item by unit, field measurements, sta to sta, limits, signed, checked	<input type="checkbox"/>
item by LS, ref to record of work done, inspection and acceptance, in Proj diary, FQB	<input type="checkbox"/>
Item force account, documented by DREWS, receipted bills for specialty work and mat'l	<input type="checkbox"/>
CO's, EWO's and RWO:	<input type="checkbox"/>
Approval by Design and/or Supervisor if required	<input type="checkbox"/>
Copy to Finals Folder for scanning	<input type="checkbox"/>
Copy to FHWA on projects with Federal Oversight	<input type="checkbox"/>

BRIDGE ITEMS

Pile reports, layouts, record piles	<input type="checkbox"/>
Forms and re-steel checks, summary sheets, elev requirements	<input type="checkbox"/>
Structural steel, inspection and acceptance, torque checks, calibrations, rotational capacity	<input type="checkbox"/>
shear connectors, bent test and weld inspection	<input type="checkbox"/>
Painting , coat thickness:	<input type="checkbox"/>

BRIDGE APPROACH WORK

Roadway excavation, waste site, grade checks	<input type="checkbox"/>
Base mat'l, source, QC/QA, finegrading	<input type="checkbox"/>

DRAINAGE

Drainage diary and installation notes and layout notes, sta to sta & offsets	<input type="checkbox"/>
Ledge removal measured	<input type="checkbox"/>

PAVEMENT ITEMS

Delivery, Cover and Tack slips totals signed, dated and entered in FBQ (certificate of analysis)	<input type="checkbox"/>
Flaggers certified	<input type="checkbox"/>
QC/QA test file	<input type="checkbox"/>

MISC:

Contractor E-vals, Waste Area authorization	<input type="checkbox"/>
Third party billing	<input type="checkbox"/>

REVIEWERS' NAME: _____ **DATE:** _____

NOTES

RESIDENT: _____
 DATE: _____
 REVIEWED BY: _____



PROJ. NO. _____
 TOWN/BRIDGE: _____

REVIEW GUIDELINES FOR ONSITE REVIEWS

LABOR COMPLIANCE

	Dates	
Wage Rate Posters & Presentation of Wage-Hour Outline & EEO Outline		
Copy of applicable wage decision available		
Are payrolls and certifications received within the 7 days allowed		
If not received within allowable time, what action taken to correct		
Verify that employees are paid correct wages		
Verify receipt of hourly breakdown for fringe benefits from Contractor		
Reviewer spot check of certified payrolls for accuracy		
Document & review employee interviews by appropriate MDOT personnel		
Has Wage Rate Compliance Officer been notified of any problems?		

FIELD BOOKS

	Dates	
Signatures, weather, working day number, contract hours, personnel,		
Eqpmnt, State Personnel, survey notes identified, crew names & duties		

CLEARING

	Dates	
Measuring referenced to source		
Inspection of limits after work done.		
If paid plan qty, verify work done according to plan		

EXCAVATION

	Dates	
Source and final placement noted in diary		
Embankment core staked out, waste storage areas designated/owner sign		
Design changes in backslopes.		
Documentation of excavation limits in backslopes and ditches		
Grubbing, undercuts, muck excavation, measured, documented		
If paid plan, verify accuracy of estimate & work done to plan		
<i>excavation by truck measure reduce 10%</i>		

BORROW

	Dates	
Source and final placement noted in diary.		
Pit rehabilitation.		
Location of pit described, layout shown		
Final cross-section or statement of inspection plus 500' check section		
<i>measurements :ip swell 15%, truck measure deduct 10%, & check Engineers est</i>		

STRUCTURAL EXCAVATION AND DRAINAGE

	Dates	
Culverts: drainage installation notes regarding backfill, line and grade		
Bedding, width and depth measurement for undercut		
Length of pipe measured or documented.		
Catch Basins: diameter of hole measured for undercut		
Multiplate: depth of bedding, width of excavation, disposition of over-		
Compensation for over-excavation if a borrow job		
<i>rock w/o rock ex minor struct pay 16 times common ex/ rock w/o rock major struct pay 6 times struct earth</i>		

GRAVEL BASE SUBBASE

	Dates	
Gravel checks, sub grade & top of gravel checks for mainline, side roads		
<i>truck measure reduce 20% & check Engineers est & how to measure plan or truck measure</i>		

Maine Department of Transportation Contractor's Performance Rating

The computer program for contractor evaluation will provide numerical analysis and rating of
CHECK APPROPRIATE ITEMS. DO NOT SCORE ITEMS WHICH DO NOT APPLY

The preliminary report shall be completed by the Resident Engineer, discussed with the Superintendent and Project Manager at a project closeout meeting and forwarded to the Construction Engineer/Program Manager. The Resident Engineer shall assure that the rating reflects the contractor's performance demonstrated by the Contractor on the contract indicated. Below Standard or Inadequate performance shall be sufficiently documented in the project records and *SO NOTED ON THIS FORM*. The Resident Engineer shall complete the review of the Preliminary Contractor's Performance Rating no later than ten (10) calendar days after the rating period ends. Contained in each category listed are items (1, 2, 3, etc.) that reflect areas of performance the Contractor demonstrated in completing the terms and conditions of the contract. The Resident Engineer using the *RATING DESCRIPTIONS ATTACHED* shall rate items. Rate each item on its own and for this contract only without any averaging of one item against another or any tempering up or down because performance on some other contract. The Resident Engineer should use those personnel that actively participated in the inspection of the work and/or the administration of the contract to assist in rating the Contractor's performance.

Date:			PIN:		
Contractor:					
Address:					
Town:		Prime:		Sub:	
Project Type			Resident Engineer:		
Bridge Construction			Project Manager:		
Highway Construction			Project Start Date:		
Paving			Project Completion Date:		
Marine Construction			Contract Amount \$		
Buildings			Subcontract Amount \$		
Traffic Signs and/or Lighting			Type of Report Annual Interim Final Type:		
Quality of Work	Cooperation	Prosecution & Progress	Policies, Procedures & Regulations	Procedural & Administrative	Total Score

Signatures

MDOT Resident Engineer

Contractor's Superintendent

MDOT Construction Engineer /
Program Manager

Administrator / Project Manager

MAINE DEPARTMENT OF TRANSPORTATION CONTRACTOR'S PERFORMANCE RATING

CATEGORIES AND ITEMS	EXCELLENT	ABOVE STANDARD	STANDARD	BELOW STANDARD	INADEQUATE	REFERENCE
QUALITY OF WORK						
1. Contractor Quality Control						
2. Workmanship						
3. Compliance with Contract Requirements						
4. Adequacy of Personnel						
5. Contractor Engineering and Survey Layout						
COOPERATION						
1. Partnering (Team Building)						
2. Attitude (Cooperation)						
PROSECUTION & PROGRESS						
1. Adherence to Progress Schedule						
2. Compliance with Environmental Regulations						
3. Compliance with Traffic Regulations						
4. Compliance with Safety Regulations						
5. Adequacy of Equipment						
IMPLEMENTATION OF FEDERAL, STATE AND LOCAL POLICIES, PROCEDURES AND REGULATIONS						
1. Compliance with Labor Standards and EEO Requirements						
2. Compliance with DBE Requirements						
3. Compliance with OJT Requirements						
PROCEDURAL/ADMINISTRATIVE						
1. Adequacy of Supervision						
2. Adequacy of Subcontractor Management						
3. Adequacy of Processing Paperwork						

MDOT Labor Interview Questionnaire

(1) Project #		(2) Town		(3) County	
(4) Prime Contractor			(5) Subcontractor		
(6) Employee	(7) Social Security #	(8) Classification	(9) Wage Rate	(10) Fringe	
(11) Are you satisfied that you are paid and classified correctly?					
<input type="checkbox"/> Yes		<input type="checkbox"/> No		If answer is no, please explain below	
(12) Is any money deducted from your pay except Income Tax, Social Security or Court Ordered Deduction?					
<input type="checkbox"/> Yes		<input type="checkbox"/> No		If answer is yes, please explain below	
(13) Signature of employee					
(14) Is permission given to divulge to your employer, the information in this statement?					
<input type="checkbox"/> Yes		<input type="checkbox"/> No			
(15) Interviewers comments					
(16) Interviewer's Signature					

State of Maine – Department of Transportation

FRINGE BENEFIT STATEMENT

October 26, 2004

CONTRACTOR/SUBCONTRACTOR	CONTRACT NUMBER	FEDERAL AID PROJECT #	DATE
TO: RESIDENT ENGINEER/LABOR COMPLIANCE OFFICER		BUSINESS ADDRESS	

The following information (as shown on wage rate determinations) paid to or on behalf of employees in various crafts or classifications is used to check payrolls or applied to force account work on the above contract.

THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE FIRST CERTIFIED PAYROLL, OR WHEN THERE HAVE BEEN ANY CHANGES.

CLASSIFICATION	FRINGE BENEFIT HOURLY AMOUNT	NAME AND ADDRESS OF PLAN, FUND, OR PROGRAM
Effective Date	Vacation \$ _____	
	Health & Welfare \$ _____	
	Pension \$ _____	
Travel Pay	Apprentice/ Training \$ _____	
\$ _____	Other \$ _____	
CLASSIFICATION	FRINGE BENEFIT HOURLY AMOUNT	NAME AND ADDRESS OF PLAN, FUND, OR PROGRAM
Effective Date	Vacation \$ _____	
	Health & Welfare \$ _____	
	Pension \$ _____	
Travel Pay	Apprentice/ Training \$ _____	
\$ _____	Other \$ _____	
CLASSIFICATION	FRINGE BENEFIT HOURLY AMOUNT	NAME AND ADDRESS OF PLAN, FUND, OR PROGRAM
Effective Date	Vacation \$ _____	
	Health & Welfare \$ _____	
	Pension \$ _____	
Travel Pay	Apprentice/ Training \$ _____	
\$ _____	Other \$ _____	